

**ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP
MATA PELAJARAN DASAR DESAIN GRAFIS KELAS X MULTIMEDIA
DI SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN AJARAN
2017/2018.**

TUGAS AKHIR SKRIPSI

Diajukan kepada Fakultas Teknik Universitas Negeri Yogyakarta
untuk Memenuhi Sebagian Persyaratan Guna Memperoleh
Gelar Sarjana Pendidikan



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FAKULTAS TEKNIK
UNIVERSITAS NEGERI YOGYAKARTA
2018**

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Tugas Akhir Skripsi dengan Judul

**ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP
MATA PELAJARAN DASAR DESAIN GRAFIS KELAS X MULTIMEDIA
DI SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN AJARAN
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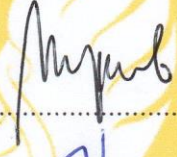


Tugas Akhir Skripsi

ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP MATA PELAJARAN DASAR DESAIN GRAFIS KELAS X MULTIMEDIA DI SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN AJARAN 2017/2018

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**ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP
MATA PELAJARAN DASAR DESAIN GRAFIS KELAS X MULTIMEDIA
DI SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN AJARAN
2017/2018.**

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui kualitas butir soal ujian akhir semester genap mata pelajaran Dasar Desain Grafis Kelas X Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018.

Penelitian ini menggunakan analisis dokumen sebagai teknik pengumpulan data. Populasi penelitian ini adalah 40 siswa kelas X Multimedia tahun ajaran 2017/2018. Semua populasi dijadikan sampel penelitian. Data penelitian diambil dari dokumen hasil tes ujian akhir semester berupa soal ujian, kunci jawaban, dan lembar jawaban seluruh peserta ujian. Data yang terkumpul dianalisis secara kuantitatif dengan menggunakan bantuan program ANATES Versi 4.09 yang meliputi aspek validitas, reliabilitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh yang kemudian akan menyimpulkan kualitas tiap butir soal.

Hasil penelitian yang telah dilakukan menunjukkan: (1) 3 butir soal (7,5%) masuk dalam kategori sangat baik. Kemudian 7 butir soal (17,5%) masuk dalam kategori baik, 13 butir soal (32,5%) masuk dalam kategori cukup, 11 butir soal (27,5%) masuk dalam kategori tidak baik, dan yang terakhir ada 6 butir soal (15%) yang masuk dalam kategori sangat tidak baik.

Kata kunci: Analisis kualitas, ujian akhir semester

**ANALYSIS ITEM SEMESTER FINAL EXAM BASIC GRAPHIC DESIGN
IN CLASS X VOCATIONAL MUHAMMADIYAH 1 BAMBANGLIPURO
YEAR 2017/2018.**

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ABSTRACT

This research aims to determine the quality of the item Final Exam subjects Basic Graphic Design Class X Multimedia in Muhammadiyah 1 Banglipo Vocation Year 2017/2018.

This research uses document analysis as a data collection technique. The population was 40 students of class X Multimedia year 2017/2018. All populations are used as research samples. The research data was taken from the results of exam questions, answer keys, and answer sheets for all examinees. The collected data were analyzed quantitatively by using the ANATES program version 4.09 which included aspects of validity, reliability, level of difficulty, distinguishing features, and the effectiveness of distractor who then concluded the quality of each item.

The results of the research that have been conducted were: (1) 3 items (7.5%) are in the very good category. Then 7 items (17,5%) were in the good category, 13 items (32.5%) were in the sufficient category, 11 items (27.5%) were in the bad category, and the last one was 6 items (15%) which is in the very bad category.

Keywords: *Quality analysis, semester final exam*

MOTTO

"Musuh yang paling berbahaya di atas dunia ini adalah penakut dan bimbang.
Teman yang paling setia, hanyalah keberanian dan keyakinan yang teguh."
(Andrew Jackson)

"Jangan bersedih atas apa yang telah berlalu, kecuali jika itu bisa membuatmu
bekerja lebih keras untuk apa yang akan datang"
(Umar bin Khattab)

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7. Semua pihak, secara langsung maupun tidak langsung, yang tidak dapat disebutkan di sini atas bantuan dan perhatiannya selama penyusunan Tugas Akhir Skripsi ini.

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Penulis,

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BAB I

PENDAHULUAN

A. Latar Belakang Masalah

Kualitas merupakan hal yang penting, terutama dalam ranah pendidikan. Pendidikan yang berkualitas menjadi investasi sumber daya manusia jangka panjang yang sangat penting bagi kelangsungan peradaban manusia. Tentang pendidikan itu sendiri dalam Undang-Undang RI No. 20 tahun 2003 tentang Sistem Pendidikan Nasional menjelaskan, pendidikan merupakan usaha sadar dan terencana untuk mengembangkan segala potensi yang dimiliki peserta didik melalui proses pembelajaran untuk mencapai tujuan pendidikan nasional yaitu mencerdaskan kehidupan bangsa.

Guna mencapai pendidikan yang berkualitas maka perlu dilakukan pembaruan dan perbaikan pada aspek yang mempengaruhi keberhasilan pendidikan salah satunya melalui sistem evaluasi hasil belajar. evaluasi hasil belajar dilakukan guna mengukur hasil belajar yang telah dilakukan. Evaluasi hasil belajar terdiri dari kegiatan mengukur dan menilai dimana ketiganya tersusun dalam tingkatan. Widoyoko (2014:7) menyatakan “evaluasi didahului dengan penilaian, penilaian didahului dengan pengukuran”.

Alat ukur yang digunakan dalam evaluasi hasil belajar adalah tes. Tes yang diterapkan di sekolah berupa tes tulis dan tes praktik. Tes tertulis digunakan sebagai alat pengukur aspek teoritis sedangkan tes praktik digunakan sebagai alat pengukur materi praktik. Tes tertulis dalam evaluasi hasil belajar yang dilakukan salah satunya berupa Ulangan Akhir Semester (UAS).

Ulangan Akhir Semester (UAS) menggunakan bentuk soal pilihan ganda dan uraian. Soal pilihan ganda merupakan jenis soal objektif dan soal uraian merupakan jenis soal subjektif. Penggunaan kedua jenis soal tersebut dalam evaluasi hasil belajar bertujuan untuk mengukur materi dari sisi objektif maupun subjektif.

Soal pilihan ganda selalu digunakan dalam Ujian Akhir Semester (UAS) karena mudah mengoreksinya dan objektivitas penilai dapat terjamin. Atas dasar itulah, sangat penting untuk memperhatikan kelayakan soal pilihan ganda yang diujikan. Dengan demikian uji kualitas butir soal perlu dilakukan.

Arikunto (2016:222) menjelaskan “...analisis soal bertujuan untuk mengadakan identifikasi soal-soal yang baik, kurang baik dan soal yang jelek”. Dengan mengadakan analisis butir soal, guru dapat mengetahui kekurangan soal tersebut guna meningkatkan kualitas soal.

Dalam melakukan analisis kualitas soal perlu memperhatikan aspek tertentu. Farida (2017:154) menyatakan, “Ada tiga yang dapat dilakukan agar menghasilkan suatu perangkat penilaian yang berkualitas, yaitu melalui analisis butir soal (item analysis), analisis validitas dan analisis reliabilitas”, Ada dua jenis analisis butir soal secara kuantitatif, yaitu menganalisis tingkat kesukaran butir soal dan analisis daya pembeda. Selain itu untuk soal bentuk pilihan berganda perlu dilakukan analisis distraktor untuk mengetahui apakah pilihan jawaban (*option*) berfungsi atau tidak. Dengan demikian, analisis kualitas soal pilihan ganda secara keseluruhan merupakan analisis yang ditinjau dari validitas, reliabilitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh

Berdasarkan dari soal pilihan ganda ujian akhir semester genap mata pelajaran Dasar Desain Grafis yang dilakukan peneliti di SMK Muhammadiyah 1 Bambanglipuro, didapatkan hasil untuk kelas X A dengan jumlah 23 siswa dan kelas X B dengan jumlah 17 siswa didapatkan hasil 36 siswa atau sebesar (90%) tidak mencapai Kriteria Ketuntasan Minimal (KKM) (lebih lengkapnya ada di Lampiran 7 pada halaman 135). Dengan kondisi tersebut menimbulkan pertanyaan mengapa hal tersebut bisa terjadi sedangkan guru merasa telah membimbing dengan baik dalam proses pembelajaran yang dilakukan.

Setelah melakukan wawancara dengan guru mata pelajaran Dasar Desain Grafis yang dilakukan peneliti di SMK Muhammadiyah 1 Bambanglipuro, menjelaskan bahwa guru mata pelajaran Dasar Desain Grafis membuat sendiri tes soal pilihan ganda dan tes uraian yang dipakai dalam Ulangan Akhir Semester dengan mengandalkan bank soal lama yang pernah dipakai ataupun soal dari internet yang menurut guru dapat mewakili lingkup teori yang diujikan. Dengan cara seperti itu guru tidak dapat mengetahui soal mana saja yang masih relevan dan mana saja yang harus diganti. Hal ini sangat disayangkan mengingat pentingnya Ujian Akhir Semester tersebut, maka seharusnya dalam instrumen soal ujian tersebut terkandung butir soal yang berkualitas sehingga dapat mengukur dengan tepat pemahaman peserta didik.

Sekolah menginstruksikan kepada guru untuk melakukan analisis soal sebagai upaya peningkatan kualitas soal namun itu terjadi hanya ketika penilaian akreditasi sekolah setiap tiga tahun sekali. Berdasarkan hal tersebut diketahui analisis butir soal tidak dilakukan secara berkala. Padahal idealnya analisis butir

soal dilakukan secara rutin agar ketepatan soal dalam mengukur pemahaman peserta didik semakin baik di setiap penggunaan. Berbagai alasan diungkapkan guru mata pelajaran Dasar Desain Grafis sebagai penyebab tidak dilakukannya analisis butir soal tersebut. Walaupun guru mengerti tentang pentingnya analisis butir soal, dan mengetahui cara analisis butir soal secara keseluruhan, namun waktu mengajar yang padat dan tidak ada perintah jelas dari sekolah untuk menganalisis butir soal, membuat guru tidak melakukan analisis butir soal. Dari beberapa alasan tersebut dapat disimpulkan kurangnya kepedulian pihak sekolah dalam meningkatkan kualitas soal dengan analisis butir soal.

Sebagai gantinya guru secara pribadi melakukan analisis butir soal namun dengan cara konvensional dimana guru menelaah berdasarkan relevansi butir soal tersebut dalam kompetensi dasar materi yang diujikan. Hal ini tentu saja bukan sebuah analisis yang menyeluruh mengingat syarat soal pilihan ganda yang baik adalah valid, reliabel, daya beda soal baik, tingkat kesukaran baik, dan menggunakan bahasa yang baik.

Berdasarkan latar belakang yang sudah dikemukakan di atas, peneliti ingin melakukan kajian analisis kualitas butir soal pilihan ganda Ujian Akhir Semester genap mata pelajaran Dasar Desain Grafis kelas X SMK Muhammadiyah 1 Bambanglipuro secara keseluruhan yang ditinjau dari validitas, reliabilitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh menggunakan aplikasi ANATES versi 4.09 dalam upaya peningkatan kualitas soal Ujian Akhir Semester mata pelajaran Dasar Desain Grafis.

B. Identifikasi Masalah

Berdasarkan latar belakang permasalahan, maka dapat diidentifikasi permasalahan sebagai berikut :

1. Hanya 10% siswa yang berhasil masuk atau melebihi Kriteria Ketuntasan Minimal (KKM) jika dihitung berdasarkan nilai dari soal pilihan ganda.
2. Pihak sekolah kurang maksimal dalam mengawasi kualitas soal yang diujikan khususnya untuk soal UAS Dasar Desain Grafis kelas X tahun ajaran 2017/2018.
3. Guru pengampu mata pelajaran Dasar Desain Grafis menggunakan soal lama dari bank soal dan soal dari internet yang tidak diketahui kualitasnya.
4. Kualitas soal UAS mata pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 belum diketahui.
5. Tidak dilakukan analisis butir soal secara keseluruhan berdasarkan aspek validitas, reliabilitas, tingkat kesukaran, daya pembeda dan efektivitas pengecoh menggunakan program komputer untuk menganalisis butir soal pilihan ganda UAS mata pelajaran Dasar Desain Grafis Kelas X.

C. Batasan Masalah

Berdasarkan identifikasi masalah yang sudah dikemukakan di atas, maka penelitian ini dibatasi pada masalah kelima yaitu menganalisis butir soal pilihan ganda UAS mata pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018. Melihat

pentingnya proses evaluasi terhadap hasil belajar, maka tidak salah penelitian ini difokuskan pada analisis butir soal secara keseluruhan.

D. Rumusan Masalah

Sesuai dengan batasan masalah di atas, rumusan masalah dalam penelitian ini yaitu tentang bagaimanakah kualitas butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 secara keseluruhan?

E. Tujuan Penelitian

Tujuan yang ingin dicapai peneliti dalam melakukan penelitian ini adalah untuk mengetahui kualitas butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 secara keseluruhan yang ditinjau dari validitas, reliabilitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh.

F. Manfaat Penelitian

Dengan tujuan penelitian di atas, diharapkan penelitian ini dapat memberikan manfaat :

1. Secara Teoritis

Diharapkan, dari penelitian ini dapat memberikan sumbangsih sebagai bahan kajian dan pertimbangan penelitian selanjutnya dalam kegiatan pengembangan ilmu pendidikan di bidang evaluasi hasil belajar.

2. Secara Praktis

a. Bagi Peneliti

Diharapkan, dari penelitian ini dapat memberikan bekal pengetahuan dan keterampilan tambahan dalam hal analisis butir soal hasil belajar apabila menjadi pendidik dimasa yang akan datang

b. Bagi Guru

Diharapkan, dari penelitian ini dapat menjadi bahan pertimbangan dalam mengembangkan instrumen penilaian serta menjadi acuan dalam memberikan tindak lanjut dari hasil analisis kualitas soal UAS mata pelajaran Dasar Desain Grafis. Sehingga dapat menyempurnakan kualitas soal menjadi lebih baik.

c. Bagi Sekolah

Penelitian ini diharapkan dapat dijadikan sumbangan pemikiran dalam menentukan kebijakan ke depan terkait penerapan analisis kualitas butir soal secara berkala pada setiap mapel yang akan diujikan kepada peserta didik sehingga mampu menghasilkan output yang lebih baik.

BAB II

KAJIAN PUSTAKA

A. Kajian Teori

1. Tinjauan Evaluasi Hasil Belajar

a. Pengertian Pengukuran, Penilaian dan Evaluasi

Pada proses pembelajaran, evaluasi (*evaluation*) merupakan hal yang harus dilakukan oleh guru. Menyebutkan ada dua istilah yang sering digunakan selain evaluasi, yaitu pengukuran (*measurement*) dan penilaian (*assessment*). Berikut pemaparan tentang pengukuran, penilaian, dan evaluasi (Arikunto & Jabar, 2014:1).

1) Pengertian pengukuran

Pengukuran atau *measurement* merupakan kegiatan yang dilakukan untuk memberikan angka-angka pada suatu gejala, peristiwa, atau benda, sehingga hasil pengukuran akan selalu berupa angka (Majid, 2014:36). Hal tersebut sependapat dengan Subali (2016:1), “pengukuran merupakan proses untuk memperoleh deskripsi numerik atau secara kuantitas tentang tingkatan karakteristik yang dimiliki seseorang dengan aturan tertentu”. Serta Widoyoko (2014:3) yang menyebutkan bahwa “pengukuran adalah kuantifikasi atau penetapan angka tentang karakteristik atau keadaan individu menurut aturan-aturan tertentu. Hasil pengukuran berupa skor atau angka”.

Pendapat lebih kuat ditulis oleh Amirono dan Daryanto (2016:11), “pengukuran atau *measurement* merupakan suatu proses atau kegiatan untuk

menentukan kualitas sesuatu yang bersifat kuantitatif, bahkan merupakan instrumen untuk melakukan penilaian”.

Sejalan dengan pendapat para ahli di atas, dalam konteks pembelajaran, Dirman dan Juarsih (2014:7) Mengartikan “pengukuran adalah proses pemberian angka terhadap proses dan hasil pembelajaran berdasarkan ukuran, aturan, atau formulasi tertentu yang jelas dan sesuai dengan tujuan yang telah ditentukan dalam rangka memberikan *judgment*, yakni berupa keputusan terhadap proses dan hasil pembelajaran”.

Dengan demikian, esensi dari pengukuran adalah penetapan angka atau kuantifikasi. Namun, hasil pengukuran tersebut belum dapat berkata banyak sebelum ditafsirkan dengan cara membandingkan dengan suatu patokan atau kriteria tertentu (Sugihartono *et al*, 2013:130).

2) Pengertian penilaian

Penilaian merupakan proses memberikan atau menentukan terhadap hasil belajar berdasarkan suatu kriteria tertentu (Jihad dan Haris, 2013:55). Widoyoko (2014:11) mendefinisikan penilaian sebagai “kegiatan menafsirkan atau memaknai data hasil suatu pengukuran berdasarkan kriteria atau standar maupun aturan-aturan tertentu”. Sugihartono *et al*, (2013:130) menyatakan “penilaian adalah suatu tindakan untuk memberikan interpretasi terhadap hasil pengukuran dengan menggunakan norma tertentu untuk mengetahui tinggi-rendahnya atau baik buruknya aspek tertentu”. Dari ketiga tokoh di atas, didapati kata kunci penilaian yang merupakan kegiatan penafsiran data hasil pengukuran.

Dalam proses pembelajaran, Dirman dan Juarsih, (2014:8) menjelaskan “penilaian merupakan proses menginterpretasikan data hasil pengukuran terhadap proses dan hasil pembelajaran yang berupa skor dengan mengubahnya menjadi nilai berdasarkan prosedur tertentu yang digunakan untuk mengambil keputusan”.

Sejalan dengan penjelasan di atas, Ekawatiningsih (2008: 274) yang menyatakan bahwa, “penilaian merupakan kegiatan yang tidak dapat dipisahkan dengan kegiatan belajar-mengajar karena arena efektivitas kegiatan belajar-mengajar sangat tergantung pada kegiatan penilaian. Kegiatan belajar mengajar akan efektif bila didukung oleh kegiatan penilaian yang efektif pula”.

3) Pengertian Evaluasi

Farida (2017:2) memberikan definisi “evaluasi adalah suatu kegiatan atau proses yang sistematis, berkelanjutan, dan menyeluruh dalam rangka pengendalian, penjaminan, dan penetapan kualitas (nilai atau arti) berbagai komponen pembelajaran berdasarkan pertimbangan-pertimbangan kriteria tertentu”. Sepaham dengan Arifin (2016:2) “Evaluasi dapat menunjukkan kualitas sesuatu” Kedua ahli ini memandang evaluasi memiliki peran dalam penetapan kualitas.

Tidak hanya untuk menunjukan kualitas, Arifin (2016:1) menambahkan, “evaluasi mengandung maksud untuk memberikan arti atau makna dari kejadian tersebut sehingga dapat diproses lebih lanjut”. Makna tersebut didapat dari penentuan keputusan melalui proses yang sistematis untuk mengetahui sejauh mana tujuan program telah dicapai (Amiriono & Daryanto, 2016:1). Proses tersebut terdiri dari dua langkah yakni mengukur dan menilai (Arikunto, 2016:3).

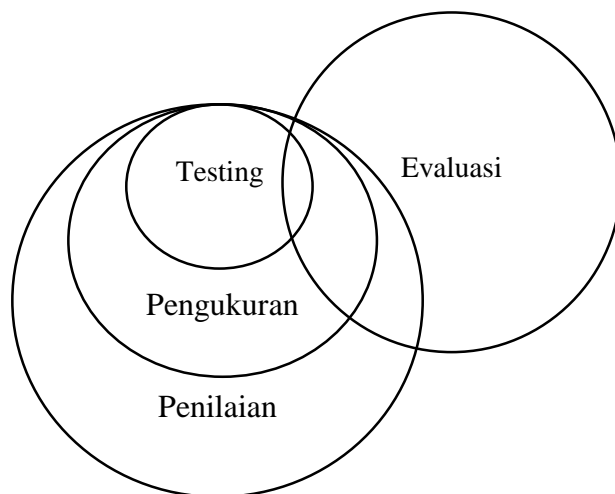
Pada implementasinya dalam pendidikan, Dirman & Juarsih (2014:9) menjelaskan “evaluasi pembelajaran adalah suatu proses menentukan nilai atau memberikan pertimbangan mengenai nilai dan arti proses dan hasil pembelajaran, yang dilaksanakan melalui kegiatan penilaian dan atau pengukuran pembelajaran”.

Dalam kehidupan sehari-hari, istilah penilaian dan evaluasi seringkali disamakan, namun sebenarnya terdapat perbedaan yang pokok diantara keduanya. Berdasarkan penjelasan di atas penilaian lebih ditekankan untuk tujuan menilai pada hasil belajar siswa. Sedangkan evaluasi dinyatakan sebagai kegiatan pengambilan keputusan berdasarkan nilai yang diperoleh dari data-data hasil belajar yang diberi nilai melalui kegiatan asesmen, sehingga selanjutnya dapat digunakan untuk pengambilan keputusan (Farida, 2017:3).

Berdasarkan pengertian di atas, evaluasi dapat dimaknai sebagai kegiatan pencarian, pengumpulan data yang kemudian diolah menjadi informasi tentang program yang dilaksanakan, lalu disajikan untuk dasar pengambilan keputusan (Suwandi, 2013:231).

Beberapa pendapat mengenai definisi pengukuran, penilaian, dan evaluasi di atas, dapat memberikan pengertian bahwa evaluasi hasil belajar merupakan kegiatan yang mencakup mengukur dan menilai proses hasil belajar dari awal proses hingga akhir dalam rangka penetapan kualitas serta pertimbangan dalam menentukan keputusan terhadap peserta didik. Dimana mengukur merupakan kegiatan kuantifikasi yang hasilnya berupa skor kemudian dimaknai dalam penilaian dengan kriteria maupun aturan tertentu.

Menurut Majid, (2016:38) penjelasan tentang hubungan antara (1) tes, (2) pengukuran, (3) penilaian, dan (4) evaluasi adalah: (1) guru melakukan penilaian menggunakan alat ukur berupa tes maupun nontes seperti soal-soal ujian. (2) Setelah ujian selesai, maka pengukuran dilakukan dengan memberikan angka terhadap hasil pekerjaan siswa. (3) Kemudian hasil pengukuran akan dibandingkan dengan kriteria tertentu untuk memunculkan nilai yang menjadi cerminan hasil belajar. (4) Terakhir, diambil keputusan atau evaluasi oleh guru tentang kualitas proses dan hasil belajar. Untuk lebih jelas dapat dilihat pada Gambar 1 berikut:



Gambar 1. Hubungan dalam proses evaluasi

b. Tujuan dan Fungsi Evaluasi Hasil Belajar

Tujuan evaluasi merupakan salah satu hal yang harus diperhatikan dalam setiap kegiatan evaluasi. Arifin (2016:14) menyatakan, tujuan evaluasi pembelajaran adalah “untuk mengetahui keefektifan dan efisiensi sistem pembelajaran, baik yang menyangkut tentang tujuan, materi, metode, media, sumber belajar, lingkungan maupun sistem penilaian itu sendiri”. Djuju Sudjana

menyatakan (2006: 35) tujuan evaluasi adalah untuk “..menyajikan data sebagai masukan bagi pengambilan keputusan”. Sedangkan dalam kaitan pendidikan, evaluasi bertujuan untuk memperbaiki mutu pembelajaran, cara belajar dan metode belajar. Hal yang dilakukan untuk menunjang tujuan tersebut adalah dengan mengumpulkan data yang membuktikan bahwa peserta didik memiliki kemajuan dalam mencapai tujuan pembelajaran yang ditetapkan. Kemudian menganalisis hal-hal penyebab kemajuan atau kegagalan belajar peserta didik (Amirin, 2013: 55-56).

Berdasarkan pernyataan ahli di atas, maka dapat disimpulkan bahwa tujuan dari kegiatan evaluasi hasil belajar adalah untuk mengumpulkan data hasil belajar peserta didik yang akan digunakan dalam pengambilan keputusan dalam rangka mengetahui kualitas proses pembelajaran dari segi hasil belajar peserta didik.

Sejalan dengan tujuan, maka fungsi evaluasi yaitu untuk perbaikan dan pengembangan sistem pembelajaran, dimana bukan hanya terhadap proses dan hasil belajar melainkan harus diarahkan pada semua komponen pembelajaran tersebut (Arifin 2016:21-22).

c. Prinsip-Prinsip Evaluasi Hasil Belajar

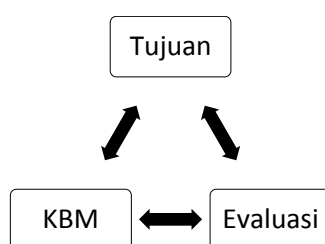
Peran evaluasi dalam upaya meningkatkan kualitas pendidikan sangatlah penting. Maka dari itu perencanaan dan pengadaan evaluasi tidaklah dilakukan secara sembarangan. Secara ideal, evaluasi dirancang dengan mengacu pada prinsip dan prosedur evaluasi. Menurut Arifin (2016:30-31), kegiatan evaluasi harus bertitik tolak dari prinsip-prinsip umum yaitu: (1) Kontinuitas, (2)

Komprehensif, (3) Adil dan objektif, (4) Kooperatif dan, (5) Praktis. (1) Kontinuitas yaitu berkala, evaluasi hendaknya dilakukan secara berkala. Hal ini didasari bahwa proses pembelajaran itu sendiri memiliki sifat yang dilakukan secara berkala. Maka dari evaluasi diadakan secara berkala agar terjalin kesinambungan. Tidak hanya dilihat dari hasilnya namun juga perlu diperhatikan dari prosesnya. (2) Komprehensif yaitu keseluruhan, evaluasi harus dilakukan secara keseluruhan. Artinya, guru dalam melakukan evaluasi suatu objek atau dalam kaitan ini adalah seorang siswa, maka harus dilakukan secara keseluruhan. (3) Adil dan objektif berarti, dalam melakukan evaluasi hendaknya tidak pilih kasih. Objektif dalam evaluasi artinya melihat sesuai kemampuan objek. Jadi dalam melakukan evaluasi, guru harus mengesampingkan perasaan, keinginan dan prasangka yang bersifat negatif serta didasari atas fakta yang ada di lapangan, bukan hasil rekayasa. (4) Kooperatif yaitu berkesinambungan, artinya dalam evaluasi guru hendaknya bekerja sama dengan sesama guru, orang tua siswa, termasuk dengan siswa itu sendiri. Hal ini diperlukan untuk menghargai pihak-pihak tersebut serta memberikan rasa puas dengan hasil evaluasi. (5) Praktis yaitu mudah digunakan.

evaluasi hendaknya mudah digunakan oleh pembuat evaluasi tersebut maupun orang lain yang menggunakan evaluasi tersebut. Maka dari itu perlu diperhatikan petunjuk penggunaan alat evaluasi serta memperhatikan tata bahasa.

Menurut Arikunto (2016:38-40), Prinsip umum yang penting dalam kegiatan evaluasi yaitu adanya hubungan antara tiga komponen yang disebut triangulasi. Ketiga komponen tersebut adalah: (1) tujuan pembelajaran, (2)

kegiatan pembelajaran atau KBM, dan (3) evaluasi. (1) Hubungan antara Tujuan dengan KBM berarti berarti, kegiatan pembelajaran dirancang berdasarkan tujuan yang ingin dicapai. (2) Hubungan antara Tujuan dengan Evaluasi berarti, dalam menyusun alat evaluasi harus berdasarkan pada tujuan yang sudah dirumuskan. (3) Hubungan antara KBM dengan Evaluasi berarti, evaluasi harus disesuaikan dengan KBM yang dilaksanakan. Triangulasi tersebut digambarkan dalam Gambar 2 sebagai berikut.



Gambar 2. Triangulasi Komponen Evaluasi

Anak panah yang mengarah pada tujuan ke KBM bermakna bahwa KBM mengacu pada tujuan dan langkah dari tujuan akan dilanjutkan pemikirannya ke KBM. Anak panah berasal dari evaluasi menuju ke tujuan memiliki makna tujuan sebagai acuan dalam kegiatan evaluasi. Anak panah berasal dari evaluasi menuju KBM bermakna bahwa KBM sebagai acuan dalam melaksanakan evaluasi (Arikunto, 2016:38-40).

d. Prosedur Evaluasi Hasil Belajar

Prosedur evaluasi merupakan langkah-langkah pokok yang harus ditempuh dalam kegiatan evaluasi. Arifin (2016:88) memaparkan bahwa prosedur pengembangan evaluasi pembelajaran terdiri atas : (1) Perencanaan evaluasi, yang meliputi analisis kebutuhan, merumuskan tujuan evaluasi, menyusun kisi-kisi, mengembangkan draf instrumen, uji coba dan analisis, merevisi dan menyusun

instrumen final. (2) Pelaksanaan evaluasi dan monitoring. (3) Pengolahan data dan analisis. (4) Pelaporan hasil evaluasi. (5) Pemanfaatan hasil evaluasi.

Prosedur evaluasi digunakan sebagai acuan pelaksanaan oleh evaluator. Evaluator memiliki tanggung jawab terhadap pelaksanaan prosedur evaluasi yang baik dan bermakna. Karena kualitas evaluasi ada ditangan evaluator sebagai pelaksana. Evaluator disini adalah guru maupun tim yang dibentuk untuk melakukan evaluasi pembelajaran secara keseluruhan.

e. Alat Evaluasi Hasil Belajar

Dalam evaluasi yang baik dibutuhkan pengukuran yang tepat. Agar pengukuran dapat dilakukan dengan tepat, maka perlu alat ukur yang baik dan memenuhi syarat. Alat ukur dalam evaluasi adalah instrumen yang digunakan untuk mempermudah seseorang dalam melaksanakan tugas atau mencapai tujuan secara lebih efektif dan efisien (Arikunto, 2016:40).

Secara garis besar, alat evaluasi digolongkan menjadi dua macam yaitu, tes dan non-tes. Selanjutnya tes dan non tes juga disebut teknik evaluasi. Mardapi (2016:95) membagi bentuk tes dalam dua kategori, yaitu tes objektif dan tes non-objektif (tes uraian).

Amirono dan Daryanto (2016:71) menyebutkan, secara umum alat evaluasi dibedakan menjadi dua jenis, yaitu: (1) Tes dan (2) Non-Tes. (1) Tes yaitu alat atau prosedur yang digunakan dalam rangka pengukuran dan penilaian, yang dapat berupa pertanyaan, perintah, dan petunjuk yang ditujukan kepada peserta didik untuk mengukur tingkat kemampuan seseorang atau mengungkap aspek tertentu dari orang yang dikenai tes. (2) Non-tes yaitu prosedur penilaian

yang bertujuan untuk menilai hasil belajar dari aspek tingkah laku seperti menilai aspek afektif dan aspek keterampilan (psikomotorik).

2. Tinjauan Tes Sebagai Teknik Dan Alat Evaluasi Hasil Belajar

a. Pengertian Tes

Tes merupakan serangkaian tugas yang harus dikerjakan atau yang harus dijawab oleh siswa (Arifin, 2016:3). tes tersebut bentuk instrumen yang digunakan untuk pengukuran (Mardapi, 2016:94). Dimana pengukuran tersebut digunakan untuk memperoleh informasi hasil belajar siswa yang memerlukan jawaban benar atau salah (Widoyoko, 2014:2).

Dari penjelasan di atas maka dapat disimpulkan, Tes adalah alat ukur dalam kegiatan pembelajaran guna mengukur kemampuan siswa setelah kegiatan pembelajaran. Selain itu tes juga digunakan sebagai alat evaluasi pembelajaran bagi guru.

b. Ditinjau dari Fungsi Tes

Munadi (2009:163) menyatakan “tingkat kecerdasan seseorang dapat dilihat atau diukur melalui berbagai cara salah satunya dengan tes”. Atas dasar tersebut, maka perlunya mengetahui pentingnya fungsi tes. Arikunto (2016:47-55) menjelaskan tiga kegunaan tes dalam mengukur siswa, yaitu: (1) Tes Diagnostik, (2) Tes Formatif dan (3) Tes Sumatif.

1) Tes Diagnostik

Arikunto (2016:48) menjelaskan, “tes diagnostik digunakan untuk mengetahui kelemahan-kelemahan siswa, sehingga berdasarkan hal tersebut dapat dilakukan penanganan yang tepat”. Sejalan dengan pernyataan tersebut,

Widoyoko (2014:63) menjelaskan, “tes diagnostik dilaksanakan untuk menemukan penyebab kesulitan belajar yang dialami siswa sehingga dapat diberikan solusi untuk memperbaiki kesulitan belajar tersebut”. Hasil tes ini memberikan informasi tentang konsep-konsep yang belum dipahami, yang telah dipahami, dan termasuk kesalahan konsep (Mardapi, 2016:96).

Berdasarkan penjelasan di atas, dapat dipahami bahwa tes diagnostik merupakan tes yang digunakan untuk menganalisis menemukan kelemahan siswa serta penyebab kesulitan belajar siswa sehingga dapat diberikan solusi untuk memperbaiki kelemahan dan permasalahan tersebut.

2) Tes Formatif

Widoyoko (2014:62) “Tes formatif memiliki fungsi untuk memonitor kemajuan belajar siswa selama maupun setelah proses pembelajaran berlangsung”. Tes ini diberikan pada akhir setiap program maka dari itu, tes formatif dapat disamakan sebagai tes diagnostik pada akhir pelajaran yang biasanya berbentuk ulangan harian (Arikunto, 2016:50). Selain untuk menentukan hasil belajar, tes formatif juga berfungsi untuk mengetahui proses pembelajaran (Mardapi, 2016:97).

Dengan tes formatif, siswa dapat mengetahui penguasaan materi tiap program yang diikuti, memberikan tanda keberhasilan suatu pelajaran sebagai motivasi siswa untuk belajar giat, serta memberikan umpan balik kepada siswa agar siswa mengetahui bagian mana yang belum dikuasainya. Bagi guru, kegunaan tes formatif adalah untuk mengetahui sejauh mana materi yang diajarkan sudah dapat diterima oleh siswa serta mengetahui bagian-bagian mana

dari materi pelajaran yang belum dikuasai siswa. Sedangkan manfaat bagi program adalah untuk mengetahui ketepatan program yang diberikan terhadap kecakapan anak, untuk mengetahui ketercapaian alat, sarana, dan prasarana, dan untuk mengetahui ketepatan metode, pendekatan, dan alat evaluasi yang digunakan (Arikunto, 2016:50-53).

3) Tes Sumatif

Tes sumatif dilaksanakan kepada sekelompok atau sebuah program yang lebih besar dalam bentuk ulangan umum yang dilaksanakan pada tiap akhir semester (Arikunto, 2016:53). Tes ini berfungsi untuk mengetahui pemahaman atau pencapaian siswa dalam kompetensi mata pelajaran atau bidang-bidang tertentu (Widoyoko, 2014:62). Mardapi (2016:97) menjelaskan tingkat “keberhasilan tes ini dinyatakan dengan skor atau nilai, pemberian sertifikat, dan sejenisnya”.

Manfaat tes sumatif bagi siswa adalah untuk menentukan nilai yang akan digunakan memberikan kedudukan terhadap siswa tersebut di antara siswa lainnya, untuk menentukan kemampuan seorang siswa menerima pembelajaran berikutnya dalam kelompok kelas. Kemudian untuk mengisi catatan kemajuan belajar siswa sebagai bentuk *feedback* dan pertanggungjawaban guru. (Arikunto, 2016:54-55).

c. Ditinjau dari Segi Pelaksanaan

Menurut Amirono dan Daryanto (2016:68), Dalam segi pelaksanaannya tes dibedakan dalam 3 macam, yaitu : (1) Tes Lisan, (2) Tes Perbuatan, dan (Tes tertulis). Berikut penjelasan mengenai ketiga hal tersebut.

1) Tes Lisan

Tes lisan (*Oral Based Test*) berbentuk tanya jawab, dimana penilai memberikan pertanyaan secara langsung kepada peserta. (Amirono dan Daryanto, 2016:68). Subali (2016:59) menjelaskan tes lisan, “dilaksanakan melalui komunikasi langsung tatap muka serta memerlukan daftar pertanyaan dan pedoman penskoran”.

Keunggulan tes lisan dibandingkan dengan tes tulis adalah hasil tes dapat langsung diketahui, *tester* dapat mengukur kemampuan berbahasa *testee* serta dapat menghindari kerjasama antar peserta. Sedangkan kelemahan dari tes lisan adalah, pelaksanaannya membutuhkan waktu yang tidak sebentar apalagi peserta tes cukup banyak, memungkinkan ketidakadilan jika penilaian guru condong ke arah subjektif, serta dapat menjadi beban tersendiri bagi *testee* yang kurang memiliki kemampuan berbicara (Widoyoko, 2014:53).

2) Tes Perbuatan

Tes perbuatan dilakukan dengan cara memerintahkan suatu pekerjaan praktik atau fisik kepada siswa yang merupakan *testee*. (Amirono dan Daryanto, 2016:68). Subali (2016:59) menyatakan, “tes ini bisa disebut dengan tes praktek atau tes kinerja dimana dapat berupa tes simulasi atau tes petik kerja”. Kegunaan tes praktik yaitu untuk mengetahui kemampuan siswa dalam mengerjakan instruksi-instruksi yang diminta.

3) Tes tertulis

Tes tertulis dilakukan secara berkelompok dengan mengambil tempat di suatu ruangan tertentu, dimana tes tersebut dikenal dua bentuk, yaitu tes esai

(uraian) dan tes obyektif (Amirono & Daryanto, 2016:68). Subali (2016:59) menjelaskan tes tertulis, “..menuntut jawaban secara tertulis baik berupa pilihan ganda maupun, isian, dan benar-salah serta berbentuk isian berbentuk singkat atau uraian”.

Kelebihan tes tulis dibandingkan dengan tes lisan adalah dapat mengukur kemampuan sejumlah siswa pada tempat yang terpisah dan dalam waktu yang sama, membuat siswa secara psikologis lebih bebas dan tidak terikat, dan objektivitas lebih tinggi daripada tes lisan. Sedangkan kelemahannya adalah, proses koreksi memakan waktu lama terutama untuk peserta dalam jumlah banyak, dapat menimbulkan kecurangan jika pengawas bersikap longgar, dapat mengandung pengertian ganda dan salah pemahaman bagi peserta tes (Widoyoko, 2014:53).

d. Ditinjau dari Bentuk Tes

Arikunto (2016:177) membedakan tes dalam dua bentuk, yaitu (1) tes subjektif, dan (2) tes obyektif. Berikut penjelasan dari para ahli mengenai tes subjektif dan tes obyektif.

1) Tes Subjektif

Tes ini pada umumnya berbentuk esai (uraian). Menurut Arikunto, (2016:177) “Tes bentuk esai merupakan jenis tes yang memerlukan jawaban bersifat pembahasan atau uraian kata-kata. Ciri-ciri pertanyaannya didahului dengan kata-kata seperti; uraikan, jelaskan, mengapa, dan sebagainya”.

Amirono dan Daryanto (2016:150) menyatakan, “tes non-obyektif (subjektif) sering disebut tes uraian adalah tes yang sistem penskorannya

dipengaruhi oleh pemberi skor”. Widoyoko (2014:57) menjelaskan “penskoran dalam tes ini dipengaruhi oleh jawaban peserta tes dan pemberi skor. Subjektivitas yang mempengaruhi adalah ketidakkonsistenan penilai, *hallo effect* (kesan guru terhadap siswa), pengaruh urutan pemeriksaan, dan pengaruh bentuk tulisan dan bahasa”.

2) Tes Objektif

Arikunto (2016:177) menjelaskan bahwa ”tes yang dalam pemeriksaannya dapat dilakukan secara objektif.” Objektif disini dilihat dari sistem penskorannya, yaitu siapa saja yang memeriksa lembar jawaban akan menghasilkan skor yang sama (Amirono dan Daryanto, 2016:150). Tes bentuk objektif ini ditujukan untuk mengatasi kelemahan dari tes bentuk esai yang condong ke arah subjektif. Widoyoko (2014:55-56) menjelaskan bahwa, “karena sifatnya yang objektif, maka tidak perlu dilakukan oleh manusia. Pekerjaan tersebut dapat dilakukan dengan mesin scanner. Dengan demikian skor hasil tes dapat dilakukan secara objektif” bentuk tes objektif yang sering digunakan adalah benar-salah, pilihan ganda, menjodohkan, dan uraian.

e. Jenis-Jenis Soal Tes Objektif

Tes objektif adalah kumpulan pertanyaan yang mengukur secara keseluruhan dari objek tertentu dengan disediakan alternatif jawabannya. Tes ini terdiri dari berbagai macam bentuk. Arikunto (2016:181-191) menyebutkan macam-macam tes objektif, antara lain: (1) Tes betul salah (*True False*), (2) Tes Pilihan Ganda (*Multiple Choice Test*), (3) Tes menjodohkan (*Matching test*), dan (4) Tes Isian (*Completion Test*).

- 1) Tes Betul salah (*True False*) Soal soalnya berupa pernyataan-pernyataan (*statement*). *Statement* tersebut ada yang benar dan ada yang salah. Orang yang ditanya bertugas untuk menandai masing-masing persyaratan itu dengan melingkari huruf B jika pernyataan itu betul menurut pendapatnya dan melingkari huruf S jika pernyataannya salah.
- 2) Tes Pilihan Ganda (*Multiple Choice Test*) terdiri dari atas suatu keterangan (*stem*) atau pemberitahuan (*option*) tentang suatu pengertian yang belum lengkap. Untuk melengkapinya harus memilih satu dari beberapa kemungkinan jawaban yang telah disediakan. *Option* terdiri atas satu jawaban yang benar yaitu kunci jawaban dan beberapa pengecoh (*distractor*)
- 3) Tes menjodohkan (*Matching test*) terdiri atas satu seri pertanyaan dan satu seri jawaban. Masing-masing pertanyaan mempunyai jawabannya yang tercantum dari seri jawabnya. Tugas murid yaitu mencari dan menempatkan jawaban-jawaban sehingga sesuai atau cocok dengan pertanyaannya.
- 4) Tes Isian (*Completion Test*).
terdiri atas kalimat yang dihilangkan bagian-bagiannya yang nanti akan diisi oleh murid. Bagian yang hilang tersebut merupakan pengertian yang kita minta dari murid. Maka dari itu tes ini biasa disebut dengan tes isian, tes menyempurnakan, atau tes melengkapi.

f. Teknik Dasar Penyusunan Tes

Arikunto (2014:167) menjelaskan urutan langkah yang dilakukan dalam penyusunan tes sebagai berikut: (1) Menentukan tujuan diadakannya tes. (2) Mengadakan pembatasan terhadap bahan yang akan dijadikan tes. (3)

Merumuskan tujuan instruksional khusus dari tiap bagian bahan. (4) Menderetkan semua indikator dalam tabel persiapan yang memuat aspek tingkah laku terkandung dalam indikator. (5) Menyusun tabel spesifikasi yang memuat pokok materi, aspek berpikir yang diukur beserta imbalan antara kedua hal tersebut.

Mardapi (2016:95-112) menjelaskan delapan langkah yang dilakukan dalam penyusunan tes sebagai berikut. (1) Menyusun spesifikasi tes. (2) Menulis tes. (3) Menelaah tes. (4) Melakukan uji coba tes. (5) Menganalisis tes. (6) Merakit tes. (7) Melaksanakan tes. (8) Menafsirkan hasil tes. Berikut penjelasan mengenai delapan langkah tersebut :

- 1) Menyusun spesifikasi tes terdiri dari (1) Menentukan tujuan tes, (2) Menyusun kisi-kisi tes, (3) Menentukan bentuk tes, dan (4) Menentukan panjang tes.
- 2) Menulis tes dilakukan dengan pedoman sesuai dengan bentuk tes yang ingin dibuat.
- 3) Menelaah tes dilakukan dengan pedoman yang telah valid.
- 4) Melakukan uji coba tes bertujuan untuk mengetahui kualitas soal. Hasil tersebut dapat digunakan sebagai dasar memperbaiki kualitas soal. Uji coba tes menghasilkan data tentang reliabilitas, validitas, tingkat kesukaran, pola jawaban, efektivitas pengecoh, daya beda, dan lain-lain.
- 5) Menganalisis tes dilakukan setelah tes digunakan, yaitu yang mencakup informasi tingkat kesulitan, daya pembeda dan indeks keandalan.
- 6) Merakit tes dengan asal dapat menyebabkan soal yang dibuat tersebut menjadi tidak baik, walaupun butir-butir soal yang disusun telah baik. maka dari itu

perlu diperhatikan dalam merakit seperti nomor urut, pengelompokan soal, *lay out*, dan sebagainya

- 7) Melaksanakan tes dilaksanakan sesuai dengan waktu yang ditentukan. Dalam pelaksanaan tes diperlukan pemantauan dan pengawasan agar tes tersebut benar-benar dilakukan dengan jujur dan sesuai dengan ketentuan. Namun, pemantauan harus tidak boleh sampai mengganggu pelaksanaan tes itu sendiri. Karena dapat mengakibatkan tidak akuratnya hasil tes yang diperoleh. Oleh karena itu perlu dilaksanakan secara hati-hati.
- 8) Menafsirkan hasil tes dari hasil tes yang berupa skor. Ada dua macam penilaian yang sering digunakan yaitu acuan norma dan kriteria. Jadi suatu nilai dibandingkan dengan kelompoknya atau dengan kriteria yang harus dicapai. Nilai merupakan alat yang berguna untuk memotivasi peserta didik dan pendidik agar mengajar lebih baik. Nilai juga merupakan informasi mengenai keberhasilan pendidik dalam melaksanakan proses pembelajaran.

g. Kaidah Pembuatan Tes Pilihan Ganda dan Uraian

Dalam membuat soal pilihan ganda harus memperhatikan pedoman pembuatan soal agar didapatkan soal pilihan ganda yang baik. Maka dari itu perlunya mengetahui kaidah pembuatan tes. Menurut Mardapi serta Jihad & Haris, pedoman pembuatan (1) soal pilihan ganda, (2) uraian adalah sebagai berikut:

1) Soal pilihan ganda

Menurut Mardapi (2016:103), dalam membuat soal bentuk pilihan ganda maka yang perlu diperhatikan adalah (1) Pokok soal harus jelas, (2) Pilihan

jawaban homogen dalam arti isi, (3) Panjang kalimat pilihan relatif sama, (4) Tidak ada petunjuk jawaban benar, (5) Hindari penggunaan pilihan jawaban: semua benar atau semua salah (6) Pilihan jawaban angka diurutkan, (7) Semua pilihan jawaban logis, (8) Jangan menggunakan negatif ganda, (9) Kalimat yang digunakan sesuai dengan tingkat perkembangan peserta tes, (10) Bahasa Indonesia yang digunakan baku, (11) Letak pilihan jawaban benar ditentukan secara acak.

Menurut Jihad dan Haris (2013:82) pedoman dalam penyusunan soal tes pilihan ganda adalah (1) Deskripsi masalah harus ditulis sedemikian rupa sehingga mudah dipahami, tidak merupakan jebakan, dan mengungkapkan permasalahan yang layak dikemukakan sebagai soal, (2) Bila bentuknya melengkapi, maka antara stem dan pilihan harus merupakan suatu bentuk kalimat yang lengkap dan secara gramatika benar, (3) Sedapat mungkin mempergunakan bentuk kalimat positif dan bila mau mempergunakan bentuk kalimat ingkar, maka sebaiknya ditulis dengan huruf besar (TIDAK, BUKAN, KECUALI), (4) Hindarkan penggunaan kata-kata tidak tentu (indefinit seperti : kebanyakan, seringkali, kadang-kadang), (5) Setiap soal sebaiknya berdiri sendiri, artinya tidak saling bergantung dan tidak merupakan petunjuk bagi yang lain. (6) Setiap stem hanya mengandung satu permasalahan, (7) Dalam menyusun pilihan hendaknya homogen dalam kandungan makna maupun (8) Kunci jawaban harus pasti tidak dapat didebatkan lagi letaknya, dan pengecoh (distractor) harus benar-benar mengganggu, atau narik/mirip sebagai jawaban, (9) Pilihan sebaiknya disusun berdasarkan aturan kronologis, alfabitis suatu seri yang berurutan, (10) Penggunaan kata-kata dalam pilihan seperti : salah semua atau bem hari-hari. Bila

dipakai “salah semua” sebaiknya semua pilihan tersebut sederajat yaitu hampir semuanya benar, dan (11) Hindari kata-kata yang sama pada pilihan.

2) Bentuk Uraian

Menurut Mardapi (2016:105-106), Bentuk tes ini dikatakan non-objektif karena penilaian yang dilakukan cenderung dipengaruhi subjektivitas dari penilai. Langkah membuat tes ini adalah (1) Gunakan kata-kata “mengapa, uraikan, jelaskan, bandingkan, tafsirkan, hitunglah, buktikan” (2) Hindari penggunaan pertanyaan “siapa, apa, bila”, (3) Menggunakan bahasa Indonesia yang baku (4) Hindari penggunaan kata-kata yang dapat ditafsirkan ganda, (5) Buat petunjuk mengerjakan soal, (6) Buat kunci jawaban, dan (7) Buat pedoman penskoran.

Menurut Jihad dan Haris (2013:76) dalam membuat soal uraian non-objektif digunakan pedoman penyusunan sebagai berikut : (1) Soal hendaklah disusun sedemikian rupa sehingga terdapat kesepakatan atas jawaban yang benar tugas peserta tes jelas, tidak memiliki arti ganda, (2) Tujuan dari setiap atau bagian soal hendaklah jelas; hal ini dapat dilihat pada tabel kisi-kisi, (3) Kata-kata dan bahasa yang dipilih hendaklah melakirakan pengertian yang sama/ tepat dengan maksud soal, tidak meragukan, dan tidak menggunakan istilah yang belum dipahami peserta tersebut, (4) Waktu dan energi yang diperlukan sudah dipertimbangkan pada saat persiapan, jangan memberi soal terlalu banyak atau terlalu luas, (5) Petunjuk tes hendaknya dibuat secara tertulis yang meliputi; waktu yang diperlukan, skor tiap atau bagian soal sehingga bobot soal diketahui, banyaknya soal juga diberitahukan, (6) Tidak boleh ada soal yang bersifat pilihan (optional), dan (7) Tes sebaiknya telah mendapatkan masukan dari kawan dosen.

h. Kriteria Tes Yang Baik

Nana Sudjana (2016:12) menyatakan, “suatu alat penilaian dikatakan mempunyai kualitas yang baik apabila alat tersebut memiliki atau memenuhi dua hal, yakni ketepatannya atau validitasnya dan ketetapan atau keajegannya atau reliabilitasnya.

Siswanto (2017:161) menjelaskan Syarat tes dapat dibedakan dua syarat, yakni syarat umum dan syarat khusus. Syarat umum untuk tes yang dimaksud, yaitu (1) Tes yang bermutu harus cukup mudah dilaksanakan (*feasible*), (2) Bahan tes yang bermutu harus disesuaikan dengan kemampuan siswa. Disini menyangkut masalah taraf kesukaran tes, (3) Tes yang bermutu harus cukup mampu membedakan prestasi siswa-siswa. Disini menyangkut masalah taraf pembeda tes, dan (4) Tes yang bermutu memiliki bentuk paralel. Paralelitas antara lain terletak pada kesesuaian. Sedangkan syarat khusus untuk tes yang dimaksud adalah (1) Reliabilitas, (2) Validitas, dan (3) Praktikabilitas (*usability*) yang merupakan kemampuan menggunakan suatu tes atau alat ukur secara mudah, efektif, dan efisien.

Dalam mengklasifikasi tes tersebut dikatakan baik atau tidak maka perlu diperhatikan ciri-ciri tes yang baik. Arikunto (2016:72-77) menjelaskan ciri-ciri tes yang baik dikatakan sebagai alat pengukur harus memenuhi persyaratan tes yaitu (1) Validitas, (2) Reliabilitas, (3) Objektivitas, (4) Praktikabilitas, dan (5) Ekonomis. (1) Validitas adalah kesahihan dimana sebuah tes dikatakan valid apabila tes itu dapat tepat mengukur apa yang hendak diukur. (2) Reliabilitas yaitu keajegan dimana tes dikatakan dapat dipercaya jika memberikan hasil yang tetap

apabila dilakukan tes berkali-kali. (3) Objektivitas berarti tidak adanya unsur pribadi atau faktor subjektif yang mempengaruhi terutama pada sistem skoringnya (4) Praktikabilitas yaitu mudah dilaksanakan, mudah pemeriksaannya, dan dilengkapi petunjuk-petunjuk yang jelas sehingga dapat diberikan atau diawali oleh orang lain, dan (5) Ekonomis berarti pelaksanaan tes tidak membutuhkan biaya yang mahal, tenaga yang banyak, dan waktu yang lama.

3. Tinjauan Tentang Analisis Soal

a. Alasan Perlunya Analisis Soal

Arikunto (2016:222) menjelaskan “Analisis soal bertujuan untuk mengadakan identifikasi soal-soal yang baik, kurang baik dan soal yang jelek”. Analisis soal dilakukan guna memperoleh informasi tentang kualitas sebuah soal dan petunjuk untuk memperbaikinya.

Kegiatan analisis tes hasil belajar dilakukan untuk memperoleh instrumen yang berkualitas baik. Analisis ini meliputi menentukan validitas dan reliabilitas tes, dan analisis butir (item analysis). (Amiriono & Daryanto. 2016:177).

Pendapat lebih kuat datang dari Purwanto (2016:96) yang mengatakan, Tes hasil belajar (THB) harus memenuhi dua syarat sebagai sebuah alat ukur yaitu validitas dan reliabilitas. Dalam pengujian tersebut, THB diuji secara keseluruhan sebagai sebuah perangkat. Pengujian kualitas perangkat dilakukan setelah pengujian atas kualitas butir-butirnya. Oleh karena itu, sebelum pengujian kualitas perangkat dilakukan, terlebih dahulu diperiksa mutu butir-butirnya dengan menggunakan analisis butir soal.

Dari pendapat ahli yang sudah dipaparkan, dapat diambil kekesimpulan bahwa analisis butir soal adalah kegiatan pengumpulan dan penggunaan informasi yang dipergunakan sebagai penilaian untuk menjadi landasan pengambilan keputusan terhadap identifikasi soal meliputi validitas, reliabilitas.

b. Jenis Analisis Butir Soal

Surapranata (2006:1) menyebutkan analisis pada umumnya dilakukan melalui dua cara, yaitu analisis kualitatif (*quanlitatif control*) dan analisis kuantitatif (*qualtitatif control*).

1) Analisis Kualitatif

Surapranata (2006:1) menjelaskan “bahwa analisis kualitatif sering pula dinamakan sebagai validitas logis yang dilakukan sebelum soal digunakan untuk melihat berfungsi tidaknya sebuah soal”.

Dalam melakukan penyelidikan kualitas butir soal tes hasil belajar, penelaahan perangkat penilaian di fokuskan kepada pemenuhan aspek materi/substansi, aspek konstruksi, dan aspek bahasa (Farida, 2017:154).

Dalam pelaksanaannya, Analisis butir soal berpegang teguh pada prinsip-prinsip penulisan soal (tertulis, praktik). Kemudian pelaksanaan analisis butir soal biasanya dilakukan sebelum soal digunakan. Hal-hal yang diperhatikan dalam analisis butir soal adalah perihal materi, bahasa penyusun soal, serta kunci jawaban atau pedoman penskoran.

Teknik analisis kualitatif memiliki kelebihan dalam hal pengecekan kualitas setiap butir soal yang merata berdasarkan kaidah penulisannya. Namun

juga memiliki kelemahan dalam hal waktu karena membutuhkan waktu yang lama untuk mendiskusikan setiap satu butir soal. (Kusaeri dan Suprananto 2012:165)

2) Analisis Kuantitatif

Surapranata (2006:1) menjelaskan bahwa “analisis soal secara kuantitatif sering pula dinamakan sebagai validitas empiris yang dilakukan untuk melihat lebih berfungsi tidaknya sebuah soal, setelah soal itu diuji cobakan kepada sampel yang representatif”.

Kusaeri dan Suprananto (2012:173) menjelaskan dalam analisis kuantitatif ada dua pendekatan, yaitu pendekatan secara (1) klasik dan (2) modern. (1) Pendekatan klasik merupakan analisis butir soal yang membutuhkan jawaban peserta tes. Dari jawaban tersebut akan diolah menggunakan teori tes klasik menjadi informasi yang digunakan untuk meningkatkan kualitas butir soal tersebut. Kelebihannya murah, sederhana, familiar, dapat dilaksanakan sehari-hari dengan cepat menggunakan komputer dan dapat menggunakan data dari beberapa peserta tes atau sampel kecil. (2) Pendekatan modern yaitu penelaahan menggunakan teori respon butir atau Item Response Theory (IRT). Penggunaan rumus matematika pada teori ini berfungsi untuk mencari hubungan antara peluang jawaban benar-salah yang dihasilkan suatu butir soal dengan hasil pekerjaan siswa.

c. Teknik Analisis Soal

Arikunto (2016:220) menjelaskan, ada empat cara untuk menilai tes, yaitu (1) Meneliti secara jujur soal-soal yang sudah disusun, (2) Mengadakan analisis soal (*item analysis*), (3) Mengadakan *checking validitas*, dan (4) Mengadakan

checking reliabilitas. Dari butir di atas didapati analisis item soal berada didalam penilaian tes.

Sudijono (2001:307) menjelaskan “analisis butir item tes hasil belajar dapat dilakukan dari tiga segi, yaitu dari derajat kesukaran item, dari segi daya pembeda, dari segi fungsi pengecohnya”. Sependapat dengan pernyataan tersebut, Purwanto (2016:99) menyebutkan “...ada sejumlah karakteristik butir yang diuji yaitu tingkat kesukaran, daya pembeda, dan efektivitas pengecoh. Setiap butir akan diperiksa mutunya dalam tiga karakteristik tersebut.”

Dari pendapat beberapa ahli di atas, dapat diambil bahwa dalam menganalisis butir soal secara keseluruhan maka perlu dilakukan peninjauan dari (1) validitas, (2) reliabilitas, (3) tingkat kesukaran, (4) daya pembeda, dan (5) efektivitas pengecoh.

Penjelasan dari ke lima poin tersebut sebagai berikut:

1) Validitas

Nana Sudjana (2016:12) menjelaskan, “alat penilaian yang telah tepat (valid) untuk suatu tujuan tertentu belum otomatis akan valid untuk tujuan yang lain. Sebab, untuk menentukan validitas tergantung pada situasi dan tujuan penilaian”. Analisis validitas bertujuan untuk mengkaji kesahihan instrumen penilaian sebagai alat yang mengukur apa yang seharusnya diukur dan ketepatan serta kendalanya (Farida. 2017:158-159). Berdasarkan pendapat ahli di atas, dapat diambil penjelasan bahwa validitas merupakan ukuran yang menunjukkan tingkat kesahihan.

Farida (2017:159) menyebutkan, “Secara garis besar, validitas dapat dibedakan menjadi dua macam, yaitu validitas logis dan validitas empiris”.

Validitas logis merupakan keadaan dimana instrumen telah lolos sesuai syarat teoritis, penalaran dan ketentuan terkait. Validitas empiris menunjuk pada kondisi instrumen yang sudah diuji dari pengalaman.

Farida (2017:159) menyebutkan validitas empiris terdiri dari tiga macam, yaitu: (1) Validitas isi, (2) Validitas konstruk, dan (3) Validitas kriteria.

1) Validitas isi

Ida Farida (2017:159) menjelaskan validitas isi (*content validity*) adalah validitas instrumen penilaian dipandang dari segi isi (*content*) materi pelajaran yang dicakup oleh instrument penilaian tersebut. Validitas isi yang tinggi dicapai apa bila materi tes merepresentasikan semua pengetahuan yang diajarkan. Nana Sudjana (2016:13) mendefinisikan, validitas isi berkenaan dengan kesanggupan alat penilaian dalam mengukur isi yang seharusnya.

Cara menilai menganalisis apakah suatu instrumen penilaian telah mencapai validitas isi adalah dengan meminta pertimbangan dari pakar (*expert judgment*) yang sesuai dengan bidang studi. (Ida Farida 2017:159). Para pakar bidang studi menelaah apakah konsep materi yang diajukan telah memadai atau tidak sebagai sampel tes. Dengan demikian validitas isi tidak memerlukan uji coba dan analisis statistik atau dinyatakan dalam bentuk angka-angka (Nana Sudjana. 2016:14).

Ida Farida (2017:159) menjelaskan hal yang dapat membuat tes agar memiliki validitas isi tinggi dengan cara:

(1) Menyusun kisi-kisi tes sebelum menulis atau memilih butir-butir soal yang akan diujikan

(2) Membuat atau memilih butir-butir soal pada tes dengan berpedoman pada SK, KD, tujuan pembelajaran yang telah dirumuskan.

2) Validitas konstruk

Nana Sudjana (2016:14) menjelaskan, validitas konstruk (*construct validity*) adalah ukuran sejauh mana alat penilaian untuk mengukur pengertian-pengertian yang terkandung dalam materi yang diukurnya. Materi tersebut masih abstrak, maka diperlukannya indikator sebagai bentuk penjabaran yang lebih spesifik. Mengukur indikator tersebut berarti mengukur validitas konstruksinya. Apa bila hasil tes menunjukkan indikator yang tidak berhubungan secara positif satu sama lain, berarti ukuran tersebut tidak memiliki validitas konstruk.

Jika butir-butir soal mengukur aspek berpikir sudah sesuai dengan aspek berpikir yang menjadi target belajar, maka tes tersebut dapat dikatakan memiliki validitas konstruks (Ida Farida 2017:159-158).

Cara lain untuk menetapkan validitas konstruk suatu alat penilaian adalah, menghubungkan (korelasi) alat penilaian yang dibuat dengan penilaian yang sudah baku seandainya telah ada yang baku. Bila menunjukkan koefisien korelasi yang tinggi, maka alat penilaian tersebut memenuhi validitasnya (Nana Sudjana. 2016:14).

3) Validitas kriteria.

Validitas hubungan kriteria adalah validitas yang ditinjau dari segi hubungan dengan alat ukur lain yang dipandang sebagai kriteria yang digunakan

untuk menentukan tinggi rendahnya validitas instrumen penilaian (Ida Farida 2017:160). Jika kriteria yang dipakai terdapat pada waktu yang bersamaan dengan pemakaian alat ukur yang diselidiki, maka validitas itu disebut validitas konkueren (*concurrent validity*). Jika kriteria yang dipakai terdapat pada waktu yang akan datang, validitas itu disebut validitas presiktif (*predictive validity*) (Ida Farida 2017:160).

Supardi (2015:38-39) menjelaskan faktor-faktor yang mempengaruhi validitas yaitu (1) faktor yang berasal dari dalam tes, (2) faktor yang berasal dari administrasi dan skor, (3) faktor-faktor yang berasal dari jawaban siswa.

1) Faktor yang berasal dari dalam tes

Beberapa sumber yang pada umumnya berasal dari faktor internal tes evaluasi diantaranya yaitu: (a) Arahan tes yang disusun dengan makna tidak jelas sehingga dapat mengurangi validitas tes. (b) Kata-kata yang digunakan dalam struktur instrumen evaluasi, terlalu sulit. (c) Item-item tes dikonstruksi dengan jelek. (d) Tidak kesulitan item tes tidak tepat dengan materi pembelajaran yang diterima siswa. (e) Waktu yang dialokasikan tidak tepat, hal ini termasuk kemungkinan terlalu kurang atau terlalu longgar. (f) Jumlah item tes yang terlalu sedikit sehingga tidak mewakili sampel materi pembelajaran. (g) Jawaban masing-masing item evaluasi tes bvida diprediksi siswa.

2) Faktor yang berasal dari administrasi dan skor

Faktor ini dapat mengurangi validitas interpretasi tes evaluasi, khususnya tes evaluasi yang dibuat oleh guru. Berikut beberapa contoh faktor yang sumbernya berasal dari proses administrasi dan skor. (a) Waktu pengajaran tidak

cukup sehingga siswa dalam memberikan jawaban dalam situasi yang tergesa-gesa. (b) Adanya kecurangan dalam tes sehingga tidak dapat membedakan antara siswa yang belajar dengan yang melakukan kecurangan. (c) Pemberian petunjuk dari pengawas yang tidak dapat dilakukan pada semua siswa. (d) Teknik pemberian skor yang tidak konsisten, misalnya pada tes esai, juga dapat mengurangi validitas tes evaluasi. (e) Siswa tidak dapat mengikuti arahan yang diberikan dalam tes baku. (f) Adanya joki (orang lain bukan siswa) yang masuk dan menjawab item tes yang diberikan.

3) Faktor-faktor yang berasal dari jawaban siswa

Seringkali terjadi bahwa interpretasi terhadap item-item tes evaluasi tidak valid, karena dipengaruhi oleh jawaban siswa daripada interpretasi item-item pada tes evaluasi. Sebagai contoh, sebelum tes para siswa menjadi tegang karena guru pengampu mata pelajaran dikenal “*killer*”, galak, dan sebagainya sehingga siswa yang ikut tes banyak yang gagal.

Penjelasan di atas merupakan penjelasan validitas secara keseluruhan. Hal yang tidak kalah penting dari validitas secara keseluruhan adalah validitas item. Arikunto (2016:90) menjelaskan, “item dikatakan valid apabila mempunyai dukungan yang besar terhadap skor total”. Sebuah item dikatakan memiliki validitas tinggi jika skor pada item tersebut mempunyai korelasi dengan skor total. Dengan kata lain, item dikatakan valid jika item tersebut memiliki korelasi positif yang signifikan antara skor item dengan skor totalnya (Amiriono & Daryanto, 2016:193). Sehingga untuk mengetahui validitas item digunakan rumus korelasi.

Arikunto (2016:93) menyebutkan, rumus korelasi biserial biasa digunakan untuk menghitung validitas item pada soal. Rumus korelasi biserial sebagai berikut :

$$y_{pbi} = \frac{M_p - M_t}{S_t} \sqrt{\frac{p}{q}}$$

Keterangan :

y_{pbi} = koefisien korelasi biserial

M_p = rerata skor dari subjek yang menjawab betul bagi item yang dicari validitasnya

M_t = rerata skor total

S_t = standar deviasi dari skor total proporsi

p = proporsi siswa yang menjawab benar

($p = \frac{\text{banyak siswa yang menjawab benar}}{\text{jumlah seluruhnya siswa}}$)

q = proporsi siswa yang menjawab salah ($q=1-p$)

Kemudian untuk mencari standar deviasi total (S_t) dapat dilakukan dengan rumus berikut ini:

$$S_t = \sqrt{\frac{(\sum X_t^2)}{N} - \left(\frac{\sum X_t}{N}\right)^2}$$

Keterangan :

X_t = Skor total dari subjek yang menjawab betul

N = Jumlah subjek

S_t = Standar deviasi total

Indeks *korelasi point biserial* (Y_{pbi}) merupakan cara penghitungan validitas item bila item memiliki skor 1 dan 0 saja. Setelah mendapatkan nilai koefisien korelasi dari hasil perhitungan, kemudian hasil perhitungan tersebut akan dibandingkan dengan nilai r tabel pada taraf signifikansi 5% sesuai dengan jumlah peserta didik yang diteliti (Arikunto, 2016: 79).

Taraf signifikansi 5% artinya kita menentukan hasil riset nanti mempunyai kesempatan untuk benar sebesar 95% dan untuk salah sebesar 5%. Untuk memperoleh signifikansi yang baik diperlukan ukuran sampel yang besar. Sebaliknya jika ukuran sampel kecil, maka kemungkinan munculnya kesalahan semakin besar.

Penafsiran harga koefisien korelasi ada dua cara yaitu (1) dengan melihat nilai r kemudian merepresentasikan korelasi tersebut, dan (2) dengan berkonsultasi ke Tabel r . Jika nilai r lebih kecil dari nilai r dalam tabel, maka korelasi tidak signifikan. Begitu juga sebaliknya, Jika nilai r lebih besar dari nilai r dalam tabel, maka korelasi signifikan (Arikunto, 2016:89). Artinya bila $Y_{pbi} < r$ tabel, maka butir soal tersebut tidak valid sedangkan bila $Y_{pbi} \geq r$ tabel maka butir soal tersebut valid.

Tafsir harga koefisien korelasi menurut Ida Farida (2017:161):

0,80 – 1,00 : korelasi sangat tinggi
0,60 – 0,80 : korelasi tinggi
0,40 – 0,60 : korelasi cukup
0,20 – 0,40 : korelasi rendah
0,00 – 0,20 : korelasi sangat rendah

Amirono & Daryanto (2016:193) menjelaskan, penyebab invaliditas instrumen adalah :

- Ketidakterwakilan konstruk. Menunjukkan bahwa aspek penting dari konstruk tidak tercakup dalam penilaian yang dilakukan ketika mengukur menggunakan tugas. Hal ini menyebabkan kemampuan peserta didik yang sebenarnya tidak dapat ditunjukkan secara jelas dalam konstruk yang akan diukur oleh tugas.

- Penyimpangan keragaman konstruk berarti bahwa instrumen yang digunakan dalam mengukur tidak relevan terhadap kandungan konstruk karena pengukuran tersebut mengandung banyak variabel.

2) Reliabilitas

Amirono & Daryanto (2016:196) menjelaskan, “reliabilitas instrumen adalah keadaan instrumen yang menunjukkan hasil pengukuran yang reliabel (tidak berubah-ubah, konsisten)”. Instrumen yang reliabel adalah instrumen yang memiliki hasil yang tetap sama ketika digunakan mengukur subjek atau objek yang sama pada waktu yang berbeda dan oleh orang yang berbeda. Analisis suatu alat pengukuran dilakukan untuk seluruh butir-butir soal, bukan tiap butir-butir soal (Farida, 2017:156).

Reliabilitas instrumen berhubungan erat dengan validitas instrumen. Instrumen yang valid sebagian besar dapat dipastikan reliabel, sebaliknya sedangkan instrumen yang reliabel belum tentu instrumen tersebut valid (Widyarini, 2015:32). Kegunaan uji reliabilitas instrumen adalah untuk mengetahui reliabilitas instrumen.

Menurut Arikunto, (2016:111), rumus yang banyak digunakan orang dalam mencari reliabilitas perangkat tes ada dua rumus, yaitu rumus K-R. 20. dan K-R. 21. Reliabilitas perangkat tes dapat dihitung dengan rumus *Kuder-Ricahrdson*, KR-20 (Farida 2017:164).

$$r_{11} = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum pq}{s^2} \right)$$

Keterangan:

r_{11} = reliabilitas tes secara keseluruhan

p = proporsi respons benar

q = proporsi respons salah
 $\sum pq$ = jumlah hasil perkalian p dan q
 k = banyak butir soal
 s = standar deviasi $\longrightarrow s^2$ = variasi skor-skor tes

Rumus K-R 21 atau rumus *Kuder-Richardson* yang ditulis oleh Amiriono & Daryanto (2016:196) sebagai berikut:

$$r_{xx} = \frac{K\sigma x^2 - X(K - \bar{X})}{\sigma x^2 (K - 1)}$$

Keterangan:

r_{xx} = reliabilitas tes secara keseluruhan
 K = jumlah butir soal dalam tes
 σx^2 = variasi skor
 \bar{X} = skor rata-rata (*mean score*)

Standar Deviasi (SD) atau Simpangan Baku (SB) dapat dicari menggunakan rumus berikut (Arikunto, 2016:112).

$$S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}$$

Keterangan :

S = Standar deviasi
 x = Simpangan X dan \bar{X} , yang dicari dari $X - \bar{X}$
 S^2 = Varians, selalu dituliskan dalam bentuk kuadrat, karena standar deviasi kuadrat
 N = Banyaknya subjek pengikut tes

Bila instrumen memiliki koefisien reliabilitas minimal 0,70 maka instrumen tersebut dinyatakan reliabel. Namun sebaiknya instrumen memiliki koefisien reliabilitas sebesar 0,80 atau lebih. (Amiriono & Daryanto. 2016:196).

Amiriono & Daryanto (2016:196) menjelaskan beberapa faktor penting yang mempengaruhi reliabilitas suatu tes, yaitu:

- Kemampuan peserta tes atau subjek uji coba. Perbedaan kemampuan peserta tes memiliki andil dalam hasil tinggi rendah reliabilitas. Reliabilitas yang tinggi didapatkan dari subjek uji yang memiliki kemampuan yang berbeda
- Bila peserta tes semakin banyak jumlahnya, maka reliabilitas instrumen akan semakin besar. hal ini terjadi karena peserta tes yang semakin banyak menyebabkan keberagaman dalam kemampuan yang dimiliki peserta tes semakin tinggi.
- Semakin banyak jumlah soal dalam instrumen tes maka semakin reliabel instrumen tersebut. Hal ini terjadi karena dengan banyaknya soal maka makin banyak mengkaji tujuan tertentu yang menggambarkan pembelajaran.
- Evaluasi yang objektif akan menaikkan reliabilitas
- Hal yang berhubungan dengan penyelenggaraan tes.

Sukardi (2015:51-52) menjelaskan tentang faktor-faktor yang memengaruhi reliabilitas yaitu : (a) panjang tes, (b) penyebaran skor, (c) kesulitan tes, dan (d) Objektivitas.

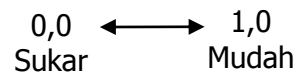
- a. Panjang tes; semakin panjang sebuah tes maka semakin banyak materi pembelajaran yang diukur. Artinya semakin akan ada dua kemungkinan (1) tes semakin mendekati kebenaran dan (2) semakin kecil siswa menebak. Jadi makin tinggi nilai koefisien reliabilitasnya.
- b. Penyebaran skor; semakin tinggi sebaran, semakin tinggi estimasi koefisien reliabilitas. Hal ini terjadi karena posisi skor siswa secara individual mempunyai kedudukan sama pada tes-tes lain, sebagai acuan.

- c. Kesulitan tes; tes yang terlalu mudah atau terlalu sulit cenderung menghasilkan skor reliabilitas rendah. Hal tersebut akan menghasilkan sebaran skor yang cenderung terbatas pada satu sis. Untuk tes yang terlalu mudah, skor jawaban siswa akan mengumpul pada sisi atas. Untuk tes yang sulit, skor jawaban siswa akan cenderung mengumpul pada ujung sebaliknya, atau rendah. Dua kesamaan dari gejala tersebut adalah perbedaan diantara individu adalah kecil dan cenderung tidak relevan.
- d. Objektivitas; yang dimaksud dengan objektif yaitu derajat dimana siswa dengan kompetensi sama akan mencapai hasil yang sama. Bila objektivitas tinggi, maka reliabilitas hasil tes tidak dipengaruhi oleh prosedur teknik penskoran atau tidak dipengaruhi pertimbangan maupun opini dari seorang evaluator.

3) Kesukaran Item

Soal yang baik berdasarkan aspek Tingkat Kesukaran adalah soal yang tidak terlalu sukar atau tidak terlalu mudah. Soal yang terlalu sukar dapat membuat peserta didik patah semangat dalam menyelesaikan lagi karena diluar kemampuannya. Sedangkan soal yang terlalu mudah dapat membuat peserta didik tidak bertumbuh dalam usaha memecahkan masalah dalam soal tersebut (Arikunto, 2016:222). Farida (2017:156) menambahkan, “Oleh karena itu, diperlukan analisis tingkat kesukaran (*difficulty index* atau *facility index*) dari butir soal, baik berupa butir soal pilihan berganda maupun butir soal uraian.

Farida (2017:156) menyatakan, besarnya indeks kesukaran (P) menunjukkan taraf kesukaran butir soal”. Rentang indeks kesukaran adalah sebagai berikut:



Menurut Farida (2017:156), Tafsir harga P:

0,00 – 0,29 : sukar
0,30 – 0,69 : sedang
0,70 – 1,00 : mudah

Untuk mencari harga indeks kesukaran (P) digunakan persamaan (Farida. 2017:223) :

$$P = \frac{B}{JS}$$

Keterangan:

P = indeks kesukaran atau indeks fasilitas
B = banyaknya siswa yang menjawab butir soal itu dengan benar
JS = jumlah seluruh siswa peserta tes

Farida (2017:157) menjelaskan tindak lanjut setelah penentuan indeks kesukaran dengan melakukan sebagai berikut:

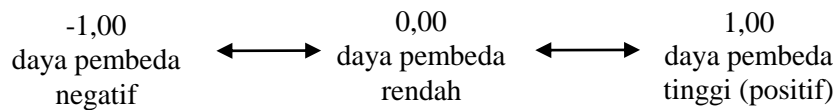
- a) Untuk butir soal yang termasuk dalam kategori baik (dalam arti derajat kesukaran butir soalnya cukup atau sedang) maka butir soal itu dicatat dalam buku bank soal, selanjutnya butir soal tersebut dapat digunakan lagi dalam tes hasil belajar pada waktu yang akan datang.
- b) Untuk butir soal yang termasuk dalam kategori sukar ada tiga kemungkinan tindak lanjut, yaitu:
 - (1) Dibuang, tidak digunakan lagi dalam tes hasil belajar berikutnya

- (2) Diperbaiki dengan meneliti ulang butir soal tersebut guna mencari penyebab peserta ujian sulit menjawab butir soal itu. hal yang perlu diperhatikan adalah kalimat, petunjuk, dan istilah-istilah yang tidak jelas. Setelah diperbaiki maka, butir soal dapat digunakan kembali.
- (3) Butir-butir soal yang termasuk ke dalam kategori sukar itu tetap dapat digunakan dalam tes (terutama tes seleksi) yang sifatnya sangat ketat. Hal itu dimaksudkan supaya sebagian besar dari testee (yang diuji) tidak lulus dalam tes seleksi tersebut.
- c) Untuk butir soal yang termasuk dalam kategori terlalu mudah, ada dua kemungkinan tindak lanjutnya, yaitu:
- (1) Dibuang dan tidak digunakan untuk tes berikutnya.
- (2) Diperbaiki dengan meneliti ulang butir soal tersebut guna mencari penyebab seluruh peserta ujian menjawab benar terhadap butir soal itu. hal yang perlu diperhatikan adalah kemungkinan alternatif pilihan jawaban yang dipasang pada butir soal itu “terlalu ketara” atau “terlalu mudah diketahui” oleh peserta tes. Setelah dilakukan perbaikan, butir soal tersebut digunakan dalam tes hasil belajar berikutnya.

Berdasarkan pemaparan di atas, maka tingkat kesukaran soal merupakan hal yang penting dalam menyusun soal. Salah satu ciri soal yang baik tersusun atas tingkat kesukaran yang seimbang. Santoso (2013:54) menyatakan, “dalam menyusun instrumen penilaian tes sebaiknya digunakan butir soal yang tingkatan kesukarannya berimbang dengan proporsi: 25% mudah, 50% sedang, dan 25% sukar”.

4) Daya Pembeda Item

Farida (2017:155) menjelaskan, “Daya pembeda soal (D) atau indeks diskriminasi adalah kemampuan suatu soal untuk membedakan antara siswa yang berkemampuan tinggi dengan siswa yang berkemampuan rendah”. Rentang nilai indeks diskriminasi (D) adalah antara -1 hingga +1.



Arikunto (2016:226) mengatakan, “seluruh pengikut tes dikelompokkan menjadi dua kelompok, yaitu kelompok pandai atau kelompok atas (*upper group*) dan kelompok bodoh atau kelompok bawah (*lower group*)”.

Penentuan siswa kelompok atas dan siswa kelompok bawah dapat dilakukan dengan mengurutkan skor perolehan siswa dari yang terbesar hingga terkecil. Untuk penentuan kelompok atas diambil dari 27% skor siswa teratas (J_A) dan untuk kelompok bawah diambil dari 27% skor siswa terbawah (J_B) (Farida, 2017:155).

Jika seluruh kelompok atas dapat menjawab sebuah soal dengan benar, sedang kelompok bawah menjawab salah, maka soal tersebut mempunyai indeks diskriminasi (D) paling besar, yaitu bernilai 1,00. Sebaliknya jika seluruh kelompok atas menjawab salah, tetapi kelompok bawah menjawab benar, maka indeks diskriminasi (D) dihasilkan bernilai -1,00. Tetapi jika semua siswa kelompok atas dan siswa kelompok bawah menjawab benar atau menjawab salah,

maka soal tersebut mempunyai indeks diskriminasi D bernilai 0,00 karena tidak mempunyai daya pembeda sama sekali (Arikunto, 2016:226).

Untuk menganalisis daya pembeda (D) suatu butir soal, digunakan persamaan sebagai berikut (Arikunto, 2016:228-229).

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B$$

Keterangan:

- J_A = banyaknya peserta kelompok atas
- J_B = banyaknya peserta kelompok bawah
- B_A = banyaknya peserta kelompok atas yang menjawab soal dengan benar
- B_B = banyaknya peserta kelompok bawah yang menjawab soal dengan benar
- P_A = proporsi peserta kelompok atas yang menjawab benar (ingat, P sebagai indeks kesukaran)
- P_B = proporsi peserta kelompok bawah yang menjawab benar

Menurut Arikunto, (2016:232) Klasifikasi daya pembeda D:

- 0,00 – 0,20 : jelek (*poor*)
- 0,21 – 0,40 : cukup (*satisfactory*)
- 0,41 – 0,70 : baik (*good*)
- 0,71 – 1,00 : baik sekali (*excellent*)

Farida (2017:155) menjelaskan “Jika D berharga negatif butir soal tersebut tidak dapat digunakan, karena menunjukkan kualitas *testee* yang ‘terbalik’”. Arikunto (2016:232) menyatakan, “Semua butir soal yang mempunyai D negatif sebaiknya dibuang saja”. Farida (2017:155) berkata, “Sedangkan untuk butir soal yang memiliki D berkategori jelek (*poor*), maka soal dapat dipergunakan setelah mengalami perbaikan”.

5) Efektivitas Pengecoh

Farida (2017:158) menjelaskan, analisis pengecoh (distraktor) dilakukan untuk mengetahui keberfungsian suatu pilihan (option) jawaban dalam soal berbentuk pilihan berganda.

Pengecoh yang berfungsi dengan baik merupakan pengecoh yang mempunyai daya tarik yang besar kepada siswa yang kurang memahami atau kurang menguasai materi. Sedangkan pengecoh yang jelek, adalah pengecoh yang tidak dipilih sama sekali oleh siswa karena terlihat mencolok (Arikunto. 2016:233-243). Jika suatu distraktor dipilih oleh 5% pengikut tes maka dapat dinyatakan berfungsi baik (Arikunto. 2016:243).

Arifin (2016:279) menyatakan, untuk menghitung indeks pengecoh pada soal dapat menggunakan rumus sebagai berikut :

$$IP = \frac{p}{(N - B)/(n - 1)} \times 100\%$$

IP = indeks pengecoh
P = jumlah peserta didik yang memilih pengecoh
N = jumlah peserta didik yang ikut tes
B = jumlah peserta didik yang menjawab benar pada setiap soal
n = jumlah alternatif jawaban
I = bilangan tetap

Arifin (2016:280) mengatakan “kriteria yang digunakan dalam melakukan penafsiran terhadap hasil perhitungan pengecoh pada butir soal, dapat menggunakan kriteria berikut”.

| | |
|--------------|---------------------------------|
| Sangat baik | IP = 76% - 125% |
| Baik | IP = 51% - 75% atau 126% - 150% |
| Kurang baik | IP = 26% - 50% atau 151% - 175% |
| Jelek | IP = 0% - 25% atau 176% - 200% |
| Sangat Jelek | IP = lebih dari 200% |

Purwanti (2014:86) menyebutkan kategori fungsi distraktor sebagai berikut.

- a) Bila semua pengecoh berfungsi, maka pengecoh tersebut masuk dalam kategori sangat baik.
- b) Bila satu alternatif pengecoh tidak berfungsi, maka pengecoh tersebut masuk dalam kategori baik.
- c) Bila dua alternatif pengecoh tidak berfungsi, maka pengecoh tersebut masuk dalam kategori cukup.
- d) Bila tiga alternatif pengecoh tidak berfungsi, maka pengecoh tersebut masuk dalam kategori kurang.
- e) Bila empat alternatif pengecoh tidak berfungsi, maka pengecoh tersebut masuk dalam kategori tidak baik.

Arikunto (2016:234) menyebutkan, ada tiga cara yang diperlakukan pada pengecoh, yaitu: (1) Diterima, karena sudah baik, (2) Ditolak, karena tidak baik, dan (3) Ditulis kembali, karena kurang baik.

d. Program ANATES

ANATES merupakan program komputer yang berfungsi menganalisis butir soal pilihan ganda mau

pun uraian. Program ini dikembangkan oleh Yudi Wibisono, S.T. yang merupakan dosen Ilmu Komputer di UPI dan Drs. Karno To, M.Pd. yang merupakan dosen Psikologi di UPI hingga versi 4.0.9. ANATES telah tercatat di Direktorat Jenderal Kekayaan Intelektual (DJKI) bidang Hak Kekayaan Intelektual (HAKI) dengan nomor registrasi C00200400338 pada tanggal 20 Juni 2005. Hal tersebut menyebabkan program ini tidak boleh diperbanyak tanpa iji

tertulis dari pengembang. Namun terdapat kelonggaran dalam menggunakan program ini dengan syarat menyumbangkan Rp. 75.000 per *copy* ke masjid atau panti asuhan dimana saja.

1) Fasilitas yang ada dalam program ANATES yaitu:

- a) Penyebaran Data, meliputi memasukan skor data hasil tes dan memberika bobot skor data sesuai yang dibutuhkan.
- b) Pengolahan Data, pada pilihan ganda meliputi reliabilitas, kelompok unggul dan asor, daya pembeda, tingkat kesukaran soal, korelasi skor butir soal dengan skor total, kualitas pengecoh, dan rekap analisis butir.
- c) Pengolahan Data, pada uraian meliputi reliabilitas, kelompok unggul dan asor, daya pembeda, tingkat kesukaran soal, korelasi skor butir soal dengan skor total, dan rekap analisis butir.

2) Manfaat dari ANATES

Program ANATES merupakan program komputer yang memiliki banyak manfaat dalam analisis butir soal. Program ANATES dapat secara otomatis menganalisis data butir soal. Dapat dengan cepat dan praktis memeriksa jawaban benar dan salah. Dari hasil tersebut memberikan pensekoran dan kriteria dari aspek-aspek yang meliputi korelasi skor butir soal dengan skor total, reliabilitas, daya pembeda, kelompok unggul dan asor, tingkat kesukaran soal, kualitas pengecoh, dan rekap analisis butir.

3) Keunggulan

Program ANATES dapat digunakan menganalisis bentuk soal uraian dan pilihan ganda dengan mudah dan cepat. Menggunakan bahasa indonesia untuk

mempermudah pengguna terutama guru di Indonesia. Hasil analisis dari ANATES dapat langsung dicetak. Semua hal tersebut menjadi keunggulan dari program ANATES yang dapat dinikmati oleh pengguna terutama guru sebagai sarana analisis butir soal.

4) Kelemahan

Kelemahan dari program ANATES yang dirasakan semua pengguna adalah pengisian data yang hanya dapat diisi secara manual. Semakin banyak siswa dan butir soal, maka semakin banyak data yang harus dimasukkan ke dalam program. Hal ini dapat menyebabkan potensi kesalahan dalam memasukkan data. Jika salah memasukkan data maka menghasilkan nilai yang salah pada hasil akhir. Pengguna dituntut untuk teliti ketika memasukkan data. Jika salah memasukkan data maka akan sangat susah untuk menemukan data yang salah dalam program tersebut.

Dalam menganalisis kualitas soal berdasarkan aspek validitas tiap butir soal, program ANATES membagi menjadi empat kategori berikut (1) signifikan, (2) sangat signifikan, (3) tidak signifikan dalam simbol (-), (4) dan 'NAN' untuk hasil yang tidak diketahui. Berdasarkan aspek reliabilitas soal secara keseluruhan, program ANATES akan menampilkan hasil analisis berupa nilai reliabilitas.

Dalam menganalisis kualitas butir soal berdasarkan aspek tingkat kesukaran, Program ANATES membagi kriteria itu berdasarkan lima interval pada Tabel 1 berikut.

Tabel 1. Kategori Tingkat Kesukaran

| Tingkat Kesukaran | Kategori |
|--------------------------|-----------------|
| 0,00 – 0,14 | Sangat Sukar |
| 0,15 – 0,30 | Sukar |
| 0,31 – 0,70 | Sedang |
| 0,71 – 0,85 | Mudah |
| 0,86 – 1,00 | Sangat Mudah |

Dalam menganalisis kualitas butir soal berdasarkan aspek efektivitas pengecoh, Program ANATES membagi kriteria itu berdasarkan lima interval dalam Tabel 2 berikut.

Tabel 2. Kategori Efektivitas pengecoh

| Simbol | Keterangan |
|---------------|-------------------|
| ** | Kunci jawaban |
| ++ | Sangat baik |
| + | Baik IP |
| - | Kurang baik |
| -- | Buruk |
| --- | Sangat Buruk |

Dalam menganalisis kualitas butir soal berdasarkan aspek Daya pembeda, Program ANATES menampilkan indeks daya pembeda dalam persen (%) dimana terdapat nilai positif dan negatif.

B. Hasil Penelitian Yang Relevan

Sebagai upaya guna memperkuat posisi penelitian ini, maka perlu beberapa penelitian relevan yang terdahulu sesuai dengan bidang penelitian. Penelitian yang ini dilakukan oleh Purwanti dengan judul “Analisis Butir Soal Ujian Akhir Mata Pelajaran Akuntansi Keuangan Menggunakan Microsoft Office Excel 2010” relevan dengan penelitian yang dilakukan oleh peneliti. Penelitian ini menggunakan metode berupa deskripsi kuantitatif. Aspek yang ditelisik dari segi validitas, reliabilitas, daya pembeda, tingkat kesukaran, dan efektivitas pengecoh. Hasil penelitian menunjukkan bahwa soal UAS mata pelajaran Akuntansi

Keuangan di SMK N 1 Yogyakarta tahun ajaran 2013/2014 dapat diketahui sebagai berikut:

- a) butir soal pilihan ganda butir soal yang masuk dalam kategori valid berjumlah 19 butir (63,33%), butir soal yang masuk dalam kategori tidak valid berjumlah 11 butir (36,67%). Sedangkan untuk soal uraian yang masuk dalam kategori valid berjumlah 3 butir (75%), soal uraian yang masuk dalam kategori tidak valid berjumlah 1 butir (25%)
- b) Berdasarkan reliabilitasnya, soal pilihan ganda indeks reliabilitas menunjukkan angka 0,660. Sedangkan untuk soal uraian sebesar 0,50 sehingga tidak reliabel
- c) Berdasarkan kesukaran butir soal, yang masuk dalam kategori sukar berjumlah 4 butir (13,33%), butir soal yang masuk dalam kategori sedang berjumlah 9 butir soal (30%), dan butir soal yang masuk dalam kategori mudah berjumlah 16 butir (56,67%).
- d) Butir soal pilihan ganda dengan daya pembeda jelek 7 butir (23,33%), cukup 7 butir (23,33%), baik 10 butir (33,33%), baik sekali 6 butir (20%), bentuk soal uraian dengan daya pembeda jelek 1 butir (25%), cukup 1 (25%), dan baik sekali 2 butir (50%)
- e) Berdasarkan efektivitas pengecoh, butir soal yang berkualitas sangat baik berjumlah 3 butir (10%), butir soal yang berkualitas baik berjumlah 10 butir (33,33%), butir soal yang berkualitas cukup berjumlah 11 butir (36,67%), butir soal yang berkualitas kurang baik berjumlah 4 butir (13,33%), dan butir soal yang berkualitas tidak baik berjumlah 2 butir (6,67%).

Persamaan penelitian yang dilakukan oleh Purwanti dengan penelitian oleh penulis yaitu sama-sama menganalisis soal pilihan ganda, dan sama-sama menganalisis dengan metode kuantitatif. Sedangkan perbedaan penelitian yang dilakukan oleh Purwanti adalah menganalisis soal mata pelajaran Akuntansi keuangan, dan menggunakan *Microsoft Office Excel 2010*.

Penelitian yang kedua dilakukan oleh Werdiningsih dengan judul “Analisis Kualitas Butir Soal Ulangan Akhir Semester Gasal Mata Pelajaran Ekonomi Kelas XII IPS SMAN 2 Bangutapan Tahun Ajaran 2014/2015”. Penelitian ini menggunakan metode deskripsi kuantitatif. Pengumpulan data menggunakan metode dokumentasi yang kemudian dianalisis menggunakan program ANATES Versi 4.09) perhitungan manual dengan bantuan program *Excel* yang kemudian menghasilkan kesimpulan sebagai berikut:

- a) Soal yang valid berjumlah 32 soal atau 77,5% sedangkan soal yang tidak valid berjumlah 9 soal atau 22,5%.
- b) Kualitas soal berdasarkan reliabilitasnya memiliki koefisien yang rendah sebesar 0,6776.
- c) Butir yang memiliki daya pembeda dalam kategori jelek berjumlah 22 butir (55%), butir yang masuk dalam kategori cukup 15 butir (37,5%), butir yang masuk dalam kategori baik 1 butir (2,5%), dan butir yang memiliki daya pembeda negatif berjumlah 2 butir soal (5%).
- d) Butir yang memiliki tingkat kesukaran yang masuk dalam kategori sukar berjumlah 5 butir (12,5%), butir yang masuk dalam kategori sedang 22 (55%) dan butir soal yang masuk dalam kategori mudah berjumlah 12 butir (32,5%).

- e) Berdasarkan efektivitas pengecoh, terdapat 1 butir soal (2,5%) yang masuk dalam kategori sangat baik, 2 butir soal (5%) yang masuk dalam kategori baik, 15 butir soal (37,5%) yang masuk dalam kategori cukup, 11 butir soal (27,5%) berkualitas kurang baik, 10 butir soal (25,5%) yang masuk dalam kategori tidak baik.

Penelitian yang dilakukan oleh Werdiningsih memiliki persamaan dengan penelitian yang dilakukan oleh penulis, yakni sama-sama menggunakan metode analisis kuantitatif, dan menggunakan program ANATES Versi 4. Sementara perbedaannya yakni penelitian ini menganalisis soal pada mata pelajaran Ekonomi serta tidak menganalisis soal uraian.

C. Kerangka Pikir

Soal tes Ujian Akhir Semester merupakan instrumen evaluasi hasil belajar yang dibuat oleh guru dengan tujuan untuk mengukur pemahaman siswa. Hasil pengukuran pemahaman siswa tersebut menjadi acuan yang digunakan untuk mengukur keberhasilan program pengajaran. Pengukuran tersebut dapat relevan jika alat ukur yang digunakan sesuai dengan kriteria standar. Atas kegunaan tersebut maka perlunya mengetahui kualitas soal UAS yang dibuat guru.

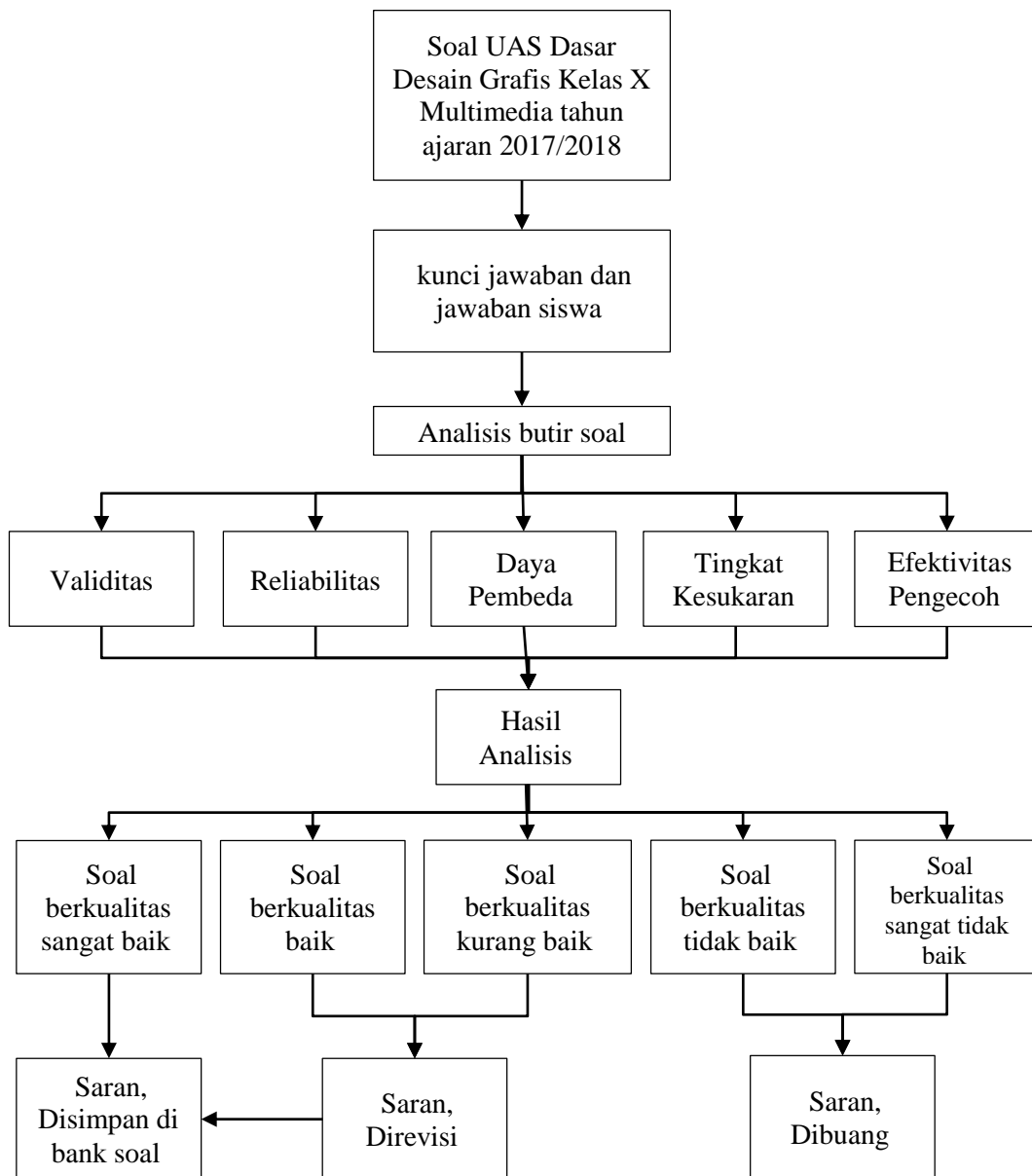
Analisis butir soal merupakan kegiatan untuk mengkaji tingkatan kualitas butir soal. Kegiatan yang dilakukan dalam analisis butir soal meliputi analisis (1) validitas, (2) reliabilitas, (3) tingkat kesukaran, (4) daya beda, dan (5) efektivitas pengecoh (*distractor*). (1) Kegiatan analisis validitas memberikan informasi mengenai keakuratan soal sebagai alat ukur. Sebuah tes memiliki validitas tinggi jika dapat menjalankan fungsi ukur secara akurat sesuai dengan kriteria dan tujuan

diadakannya pengukuran tersebut. (2) Analisis reliabilitas bertujuan untuk mengetahui tingkat kehandalan soal dengan melihat konsistensi soal dalam memberikan hasil yang sama bila diujikan. (3) Analisis tingkat kesukaran soal ditunjukkan melalui nilai indeks tingkat kesukaran soal yang berkisar antara 0,00 hingga 1,00. Semakin mendekati indeks 1,00 maka soal tersebut semakin mudah. (4) Kegiatan analisis daya pembeda berfungsi dalam membedakan siswa yang masuk kategori prestasi rendah maupun siswa yang masuk kategori prestasi tinggi. (5) Analisis efektivitas pengecoh menunjukkan informasi mengenai sebaran jawaban peserta ujian

Hasil analisis kualitas butir soal dibagi dalam lima kategori yaitu, sangat baik, baik, kurang baik, tidak baik, sangat tidak baik. Soal yang masuk dalam kategori 'sangat baik' akan disimpan kedalam bank soal. Soal yang masuk dalam kategori 'baik' dan 'kurang baik' akan diperbaiki terlebih dahulu sebelum disimpan kedalam bank soal. Sedangkan, untuk soal yang masuk dalam kategori 'tidak baik' dan 'sangat tidak baik' akan membutuhkan perbaikan yang sangat signifikan sebelum dapat disimpan di bank soal, maka dari itu lebih baik soal dengan kualitas tersebut tidak digunakan.

Berdasarkan informasi dari analisis butir soal tersebut, dapat diketahui kualitas butir soal yang kemudian menjadi acuan guru dalam melakukan perbaikan-perbaikan terutama untuk butir soal yang belum memenuhi standar. Dengan demikian maka, analisis butir soal merupakan kegiatan yang sangat penting sebelum soal tersebut diujikan kepada siswa.

Gambar 3. Kerangka Pikir



D. Pertanyaan Penelitian

Berikut pertanyaan yang diajukan oleh peneliti

1. Bagaimana kualitas butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dari aspek validitas soal?
2. Bagaimana kualitas butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dari aspek reliabilitas soal?
3. Bagaimana kualitas butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dari aspek tingkat kesukaran soal?
4. Bagaimana kualitas butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dari aspek daya pembeda soal?
5. Bagaimana kualitas butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dari aspek efektivitas pengecoh soal?

BAB III

METODE PENELITIAN

A. Desain Penelitian

Desain penelitian yang digunakan dalam penelitian ini adalah desain penelitian deskriptif. Tujuan dari pemilihan desain penelitian tersebut adalah untuk mendapatkan data dan informasi yang dapat digunakan dalam mendeskripsikan secara keseluruhan kualitas soal ujian akhir semester genap mata pelajaran pengolahan dasar desain grafis kelas X Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018. Peninjauan analisis butir soal secara keseluruhan dilihat dari aspek validitas, reliabilitas, tingkat kesukaran, daya pembeda soal dan efektivitas pengecoh. Penelitian deskriptif ini dilakukan dengan cara menganalisis jawaban siswa dari lembar jawab yang digunakan oleh peserta didik, berdasarkan kunci jawaban.

Pendekatan yang digunakan dalam penelitian ini adalah pendekatan kuantitatif dimana data yang digunakan dalam penelitian ini berwujud angka (nominal) kemudian dianalisis dengan menggunakan program *ANATES 4.0.9*.

B. Tempat dan Waktu Penelitian

Penelitian ini dilaksanakan di SMK Muhammadiyah 1 Bambanglipuro, Kanutan, Sumbermulyo, Bambanglipuro, Bantul, Yogyakarta. Penelitian dilaksanakan selama satu bulan dimulai tanggal 6 Agustus 2018 – 10 September 2018.

C. Populasi Penelitian

Populasi siswa kelas X yang mengikuti pelajaran pengolahan dasar desain grafis di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 berjumlah 40 orang. Karena populasi yang digunakan dalam penelitian ini jumlahnya tidak banyak, yaitu siswa yang mengikuti ujian akhir semester genap mata pelajaran pengolahan dasar desain grafis, maka untuk penelitian ini merupakan penelitian populasi.

D. Definisi Operasional Variabel

Analisis butir soal merupakan kegiatan pengumpulan dan penggunaan informasi dari jawaban siswa untuk dipergunakan sebagai penilaian yang kemudian menjadi landasan pengambilan keputusan terhadap identifikasi soal.

Variabel pada penelitian analisis butir soal ujian akhir semester genap mata pelajaran pengolahan dasar desain grafis kelas X Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 adalah aspek (1) validitas, (2) reliabilitas, (3) tingkat kesukaran, (4) efektivitas pengecoh, dan (5) daya pembeda. Untuk lebih rinci bisa dilihat pada Tabel 3, berikut.

Tabel 3. Rincian Variabel

| NO | Variabel | Definisi Operasional | Alat ukur | Hasil Ukur | Teori Yang Digunakan |
|----|-----------|--|---------------|---|---|
| 1 | Validitas | Ukuran atau standar yang menunjukkan tingkat kesahihan butir soal. Butir soal dikatakan valid atau tidaknya berdasarkan perbandingan hasil analisis butir soal tersebut berupa nilai (r) terhadap tafsiran harga koefisien korelasi. | ANATE S 4.0.9 | - Sangat Signifikan - Signifikan - (-) - NAN | Koefisien korelasi berupa nilai (y_{pbi}) $y_{pbi} \geq r_{tabel} =$ signifikan (valid) $y_{pbi} < r_{tabel} =$ tidak signifikan (tidak valid) r_{tabel} pada taraf signifikansi 5% Arikunto, (2016:89) |

Lanjutan ada di halaman selanjutnya

Lanjutan Tabel 3.

| NO | Variabel | Definisi Operasional | Alat ukur | Hasil Ukur | Teori Yang Digunakan |
|----|----------------------|---|--------------|--|---|
| 2 | Reliabilitas | Suatu keajegan atau kesamaan hasil pengukuran objek yang dilakukan berkali-kali pada waktu yang berbeda | ANATES 4.0.9 | Hasil perhitungan reliabilitas Tes | Koefisien reliabilitas berupa nilai (r) $r_{11} \geq 0,70$ = reliabilitas tinggi $r_{11} < 0,70$ = reliabilitas rendah Amirono & Daryanto, (2016:196) |
| 3 | Tingkat Kesukaran | Derajat yang menunjukkan sukar atau mudahnya suatu instrumen tes dinyatakan dalam bentuk indeks kesukaran (P) | ANATES 4.0.9 | <ul style="list-style-type: none"> - Sangat Sukar - Sukar - Sedang - Mudah - Sangat Mudah | Tingkat kesukaran (P) $0,00 - 0,29$ = sukar $0,30 - 0,69$ = sedang $0,70 - 1,00$ = mudah Farida, (2017:156) |
| 4 | Daya Pembeda | Kemampuan soal untuk membedakan siswa yang mempunyai kemampuan tinggi dan siswa yang memiliki kemampuan rendah dalam bentuk daya pembeda soal (D) atau indeks diskriminasi. | ANATES 4.0.9 | Hasil perhitungan Daya Pembeda dinyatakan dalam persen (%) | Indeks Daya Pembeda (DP) $0,00 - 0,20$ = jelek $0,21 - 0,40$ = cukup $0,41 - 0,70$ = baik $0,71 - 1,00$ = baik sekali Nilai negatif = sangat jelek (dibuang) Arikunto, (2016:232) |
| 5 | Efektivitas Pengecoh | Ukuran alternatif jawaban yang digunakan dalam bentuk soal pilihan ganda | ANATES 4.0.9 | Indeks pengecoh (IP) ** = Kunci jawaban ++ = Sangat baik + = Baik + = Kurang baik -- = Buruk --- = Sangat Buruk | Jumlah pengecoh berfungsi : 4 = sangat baik 3 = baik 2 = cukup 1 = kurang baik 0 = tidak baik Purwanti, (2014:86)) |

Mengenai Tabel 3 di atas, terdapat lima variabel yang akan dianalisis menggunakan *ANATES 4.0.9*. Namun, hasil ukur *ANATES* yang digunakan hanya berupa nilai nominal dari pengukuran tersebut tanpa menggunakan hasil ukur berupa kategori (kolom Hasil Ukur). Nilai tersebut akan dikategorikan berdasarkan teori-teori yang terkait. Hal ini dilakukan, sebab tidak disebutkan sumber dasar teori yang digunakan dalam program *ANATES*. Atas dasar tersebut, perlu dilakukan klasifikasi kategori menggunakan teori terkait (kolom Teori Yang Digunakan) yang diketahui sumber literturnya.

E. Instrumen Pengumpulan Data

Instrumen pengumpulan data merupakan alat bantu yang digunakan oleh peneliti dalam kegiatan mengumpulkan data agar dapat mempermudah dalam pengumpulan data. Maka dari penjelasan itu instrumen pengumpulan data yaitu lembar jawab siswa dalam ujian akhir semester genap mata pelajaran pengolahan dasar desain grafis kelas X Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018.

Data yang dikumpulkan berbentuk jawaban tes yang ditulis siswa pada lembar jawab siswa. Lembar jawab siswa merupakan dokumen resmi dari lembaga pendidikan SMK Muhammadiyah 1 Bambanglipuro dimana instrumen tersebut tidak memiliki unsur subjektif dari peneliti serta lembaga terkait. Berdasarkan hal tersebut lembar jawab siswa dapat digunakan sebagai media dalam pengumpulan data yang valid dan reliabel.

F. Teknik Pengumpulan Data

Penelitian ini menggunakan teknik pengumpulan data studi dokumentasi primer, yaitu dokumen yang ditulis langsung oleh orang yang mengalami peristiwa. Dimana dokumen tersebut merupakan lembar jawab, kunci jawaban pilihan ganda ujian akhir semester genap mata pelajaran pengolahan dasar desain grafis kelas X Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018.

G. Teknik Analisis Data

Data yang terkumpul dianalisis secara deskriptif kuantitatif. Soal ujian akhir semester genap mata pelajaran Dasar Desain Grafis kelas X SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 berbentuk pilihan ganda atau objektif. Butir-butir soal pilihan ganda tersebut dianalisis menggunakan program *ANATES 4.0.9*. Pemilihan program ini sebagai alat menganalisis karena dapat digunakan dalam menganalisis butir soal pilihan ganda berdasarkan aspek (1) validitas, (2) reliabilitas, (3) tingkat kesukaran, (4) daya pembeda, dan (5) efektivitas pengecoh.

1. Validitas

Hasil dari perhitungan *ANATES* memunculkan nilai korelasi dan dua kriteria signifikansi, yaitu: signifikan dan sangat signifikan. Nilai korelasi tersebut dibandingkan dengan teori Arikunto (2016:89) tentang batas signifikansi koefisien korelasi (r tabel). Jika nilai korelasi *ANATES* $\geq r$ tabel maka butir soal tersebut valid, sebaliknya $y_{pbi} < r$ tabel maka butir soal tersebut tidak valid.

Berdasarkan penjelasan di atas, jika butir soal masuk dalam kategori valid maka diberikan nilai 1. Sebaliknya, jika butir soal tersebut tidak valid, maka diberikan nilai 0.

2. Reliabilitas

Hasil dari perhitungan ANATES merupakan nilai reliabilitas tes secara keseluruhan sebagai satu rangkaian instrumen penilaian. Nilai tersebut akan dibandingkan dengan batas koefisien reliabilitas minimal 0,70 dari teori Amiriono & Daryanto (2016:196). Jika reliabilitas tes (r_{xx}) $\geq 0,70$ berarti tes tersebut dinyatakan memiliki reliabilitas tinggi. Sebaliknya Jika reliabilitas tes (r_{xx}) $< 0,70$ berarti tes tersebut dinyatakan memiliki reliabilitas rendah.

3. Tingkat Kesukaran

Hasil dari perhitungan ANATES memunculkan nilai yang dinyatakan dalam persen. Kemudian nilai tersebut dikategorikan sesuai nilai interval patokan yang akan memunculkan tiga kriteria yaitu sukar, sedang, atau mudah dari teori milik Farida (2017:156). Untuk soal yang masuk dalam kategori sedang akan bernilai 1 dan untuk butir soal yang masuk dalam kategori sukar atau mudah akan bernilai 0.

4. Daya Pembeda.

Hasil dari perhitungan ANATES memunculkan nilai yang dinyatakan dalam persen. Kemudian nilai tersebut akan dikategorikan dalam kategori berikut: jelek sekali (nilai negatif), jelek, cukup, baik, dan baik sekali sesuai dengan teori milik Arikunto, (2016:232). Daya pembeda soal dapat memadai jika butir soal yang masuk dalam kategori cukup, baik, atau baik sekali. Oleh karena itu untuk

butir soal yang masuk dalam kategori kategori cukup, baik, atau baik sekali akan bernilai 1, sedangkan untuk butir soal yang masuk dalam kategori jelek atau jelek sekali akan bernilai 0.

5. Efektivitas Pengecoh

Hasil dari perhitungan ANATES memunculkan kategori yaitu: sangat baik, baik, kurang baik, buruk, sangat buruk, dan kunci jawaban dalam setiap pilihan jawaban. Untuk kategori sangat baik, baik, kurang baik bernilai 1 dan buruk atau sangat buruk bernilai 0. Kemudian dikategorikan guna mendapatkan representatif nilai pengecoh dalam butir soal dalam klasifikasi Purwanti (2014:86) berikut:

- a) Butir soal dengan nilai pengecoh 0 masuk dalam kategori tidak baik.
- b) Butir soal dengan nilai pengecoh 1 masuk dalam kategori kurang baik.
- c) Butir soal dengan nilai pengecoh 2 masuk dalam kategori cukup baik.
- d) Butir soal dengan nilai pengecoh 3 masuk dalam kategori baik.
- e) Butir soal dengan nilai pengecoh 4 masuk dalam kategori sangat baik.

Efektivitas pengecoh dapat berfungsi jika butir soal dalam kategori sangat baik, baik, atau cukup baik. Berdasarkan itu, untuk butir soal dalam kategori sangat baik, baik, atau cukup baik akan bernilai 1 sedangkan untuk butir soal kategori kurang baik atau tidak baik akan bernilai 0.

Berdasarkan pemaparan dari kelima aspek tersebut, maka dibuatlah kriteria kualitas butir soal (Rochim. 2018:51-52) yang ada pada Tabel 4.

Tabel 4. Kriteria Kualitas Butir Soal Pilihan Ganda

| Jumlah kriteria yang terpenuhi | Kualitas Butir Soal | Revisi | Simpan di Bank Soal |
|--------------------------------|---------------------|-------------|---------------------|
| 0 | Sangat Tidak Baik | Dibuang | Tidak |
| 1 | Tidak Baik | Dibuang | Tidak |
| 2 | Cukup | Revisi | Belum |
| 3 | Baik | Revisi | Belum |
| 4 | Sangat Baik | Tidak perlu | Ya |

Berikut penjelasan dari tabel kriteria kualitas butir soal di atas.

- a. Bila butir soal tersebut tidak sama sekali memenuhi empat kriteria yaitu validitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh, maka butir soal dikatakan memiliki kualitas sangat tidak baik. Butir soal tersebut harus diganti dengan butir soal yang baru karena dengan kualitas ini butir soal tersebut tidak dapat mengukur dengan tepat kemampuan siswa.
- b. Bila butir soal tersebut memenuhi satu kriteria dari keempat kriteria yang disebutkan pada paragraf a, maka butir soal dikatakan memiliki kualitas tidak baik. Dengan kualitas butir soal seperti ini harus diganti dengan butir soal yang baru karena butir soal tersebut tidak layak untuk dijadikan bahan revisi .
- c. Bila butir soal tersebut memenuhi dua kriteria dari keempat kriteria yang disebutkan pada paragraf a, maka butir soal dikatakan memiliki kualitas cukup namun perlu adanya perbaikan pada kriteria-kriteria yang belum terpenuhi.
- d. Bila butir soal tersebut memenuhi tiga kriteria dari keempat kriteria yang disebutkan pada paragraf a, maka butir soal dikatakan memiliki kualitas baik namun perlu adanya perbaikan pada kriteria yang belum terpenuhi.
- e. Bila butir soal tersebut memenuhi semua kriteria dari keempat kriteria yang disebutkan pada paragraf a, maka butir soal dikatakan memiliki kualitas sangat baik.
- f. Selain syarat berbasis butir, maka tes secara keseluruhan harus reliabel dengan ketentuan yang sudah dijelaskan sebelumnya.

BAB IV

HASIL PENELITIAN DAN PEMBAHASAN

A. Deskripsi Hasil Penelitian

Diskripsi dari Soal Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 adalah soal berjenis pilihan ganda. Soal ini masuk dalam kategori tes tertulis dari segi pelaksanaannya. Soal ini merupakan tes objektif dari sisi bentuk tes. Kemudian soal ini masuk dalam kategori tes sumatif yang artinya fungsi dari soal ini adalah menentukan nilai, kedudukan dan kemampuan siswa setelah menerima pembelajaran. Soal ini berjumlah 40 butir yang dikerjakan oleh 40 orang siswa. Terdiri dari 23 siswa Multimedia A dan 17 siswa Multimedia B. Mayoritas materi yang ditanyakan tentang Adobe Photoshop dengan kategori soal C1 yaitu mengingat. Soal tipe mengingat artinya siswa diminta untuk mengungkapkan kembali fakta-fakta yang sederhana. Tidak ada kisi-kisi dan RPP (rencana pelaksanaan pembelajaran) yang disertakan. Satu-satu sumber acuan dalam pembuat soal adalah silabus dengan Indikator Pencapaian Kompetensi nomor 3.9.1 (halaman 98) tentang menjelaskan fungsi fitur pengolah gambar bitmap.

Hasil penelitian ini merupakan jawaban pertanyaan penelitian tentang kualitas butir soal butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dari aspek validitas, reliabilitas, tingkat kesukaran, daya pembeda dan efektivitas pengecoh.

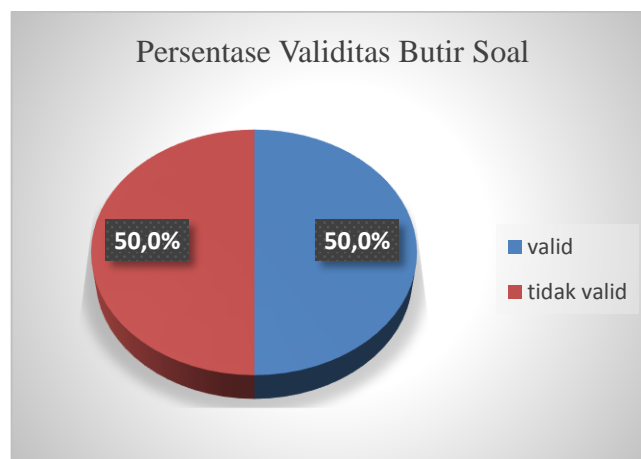
1. Validitas

Pengujian validitas butir soal menggunakan hasil perhitungan program ANATES versi 4. Hasil perhitungan tersebut menunjukkan 20 soal (50%) dinyatakan valid dan 20 soal (50%) dinyatakan tidak valid. Rincian distribusi butir soal tersebut dapat dilihat dalam Tabel 5 distribusi validitas butir soal mata pelajaran dasar desain grafis berikut (lebih lengkapnya ada di Lampiran 8 halaman 136):

Tabel 5. Distribusi Validitas Butir Soal Dasar Desain Grafis

| No | Validitas | Kategori | No Butir | Jumlah | Presentase |
|----|--------------|-------------|---|--------|------------|
| 1 | $\geq 0,312$ | Valid | 1, 2, 3, 5, 8, 9, 11, 14, 16, 18, 19, 20, 21, 23, 26, 29, 30, 33, 37, 40 | 20 | 50% |
| 2 | $< 0,312$ | Tidak valid | 4, 6, 7, 10, 12, 13, 15, 17, 22, 24, 25, 27, 28, 31, 32, 34, 35, 36, 38, 39 | 20 | 50% |

Kemudian berikut Gambar 4 diagram lingkaran hasil analisis validitas butir soal mata pelajaran dasar desain grafis



Gambar 4. Distribusi Soal berdasarkan aspek Validitas

2. Reliabilitas

Berdasarkan hasil perhitungan ANATES (lebih lengkapnya ada di Lampiran 9 halaman 137), diketahui soal tersebut memiliki reliabilitas sebesar 0,54 sehingga berdasarkan dari perbandingan $r_{xx} \geq 0,70$ maka dapat disimpulkan bahwa soal tersebut memiliki tingkat reliabilitas yang rendah.

3. Daya Pembeda

Berdasarkan hasil perhitungan ANATES yang kemudian dikonsultasikan dengan indeks daya pembeda, menunjukan 11 soal atau sebesar 27,5% dinyatakan jelek, 8 soal atau sebesar 20% dinyatakan cukup, 10 soal atau sebesar 25% dinyatakan baik, 4 soal atau sebesar 10% dinyatakan baik sekali, dan 7 soal atau sebesar 17,5% dinyatakan sangat jelek karena memiliki nilai negatif. Rincian distribusi butir soal tersebut dapat dilihat dalam Tabel 6 distribusi daya pembeda butir soal mata pelajaran dasar desain grafis berikut (lebih lengkapnya ada di Lampiran 10 halaman 138):

Tabel 6. Distribusi Daya Pembeda Butir Soal Dasar Desain Grafis

| No | Interval | Kategori | No Butir | Jumlah | Presentase |
|----|---------------|--------------|---|--------|------------|
| 1 | 0,00 – 0,20 | Jelek | 4, 17, 22, 25, 27, 28, 30, 31, 32, 34, 35 | 11 | 27,5% |
| 2 | 0,21 – 0,40 | Cukup | 3, 9, 10, 11, 13, 18, 20, 37 | 8 | 20% |
| 3 | 0,41 – 0,70 | Baik | 1, 2, 5, 12, 14, 21, 23, 29, 33, 40 | 10 | 25% |
| 4 | 0,71 – 100 | Baik sekali | 19, 8, 16, 26 | 4 | 10% |
| 5 | Nilai negatif | Sangat jelek | 7,15,39,36,24,38 | 7 | 17,5% |

Berikut Gambar 5 diagram lingkaran hasil analisis daya pembeda butir soal mata pelajaran dasar desain grafis.



Gambar 5. Distribusi Soal berdasarkan aspek Daya Pembeda Butir Soal

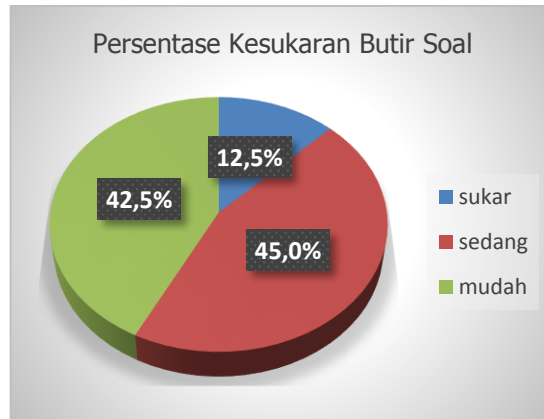
4. Tingkat Kesukaran

Berdasarkan hasil perhitungan ANATES yang kemudian dikonsultasikan dengan indeks tingkat kesukaran, menunjukkan 6 soal (15%) dinyatakan sukar, 18 soal (45%) dinyatakan sedang, dan 16 soal (40%) dinyatakan mudah. Rincian distribusi butir soal tersebut dapat dilihat dalam Tabel 7 distribusi tingkat kesukaran butir soal mata pelajaran dasar desain grafis berikut (lebih lengkapnya ada di Lampiran 11 halaman 139):

Tabel 7. Distribusi Tingkat Kesukaran Butir Soal Dasar Desain Grafis

| No | Interval | Kategori | No Butir | Jumlah | Presentase |
|----|-------------|----------|--|--------|------------|
| 1 | 0,00 – 0,29 | Sukar | 7, 10 ,22 ,25 ,39 | 5 | 12,5% |
| 2 | 0,30 – 0,69 | Sedang | 3, 5, 6, 8, 11, 13, 15, 19, 21, 24, 26, 31, 32, 35, 36, 37, 38, 40 | 18 | 45% |
| 3 | 0,70 – 1,00 | Mudah | 1, 2, 4, 9, 12, 14, 16, 17, 18, 20, 23, 27, 28, 29, 30, 33, 34 | 17 | 42,5% |

Berikut Gambar 6 diagram lingkaran hasil analisis kesukaran butir soal mata pelajaran dasar desain grafis



Gambar 6. Distribusi Soal berdasarkan aspek Kesukaran Butir Soal

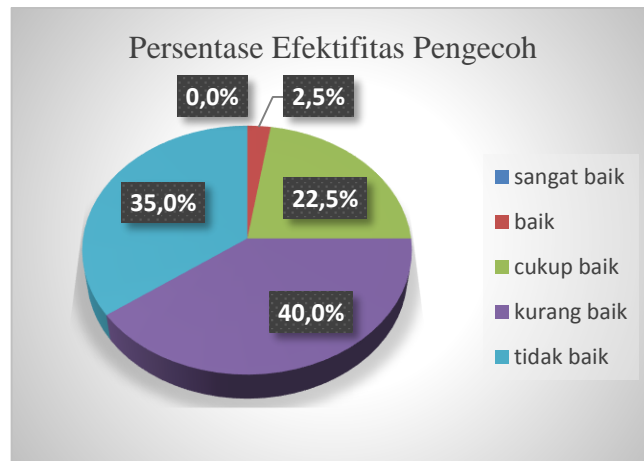
5. Efektivitas Pengecoh

Berdasarkan hasil perhitungan ANATES, menunjukan 1 soal (2,5%) dinyatakan baik, 9 soal (22,5%) dinyatakan cukup baik, 16 soal (40%) dinyatakan kurang baik, 14 soal atau sebesar 35% dinyatakan tidak baik sedangkan untuk kategori sangat baik, tidak ada butir soal yang masuk kriteria tersebut. Rincian distribusi butir soal tersebut dapat dilihat dalam Tabel 8 distribusi efektivitas pengecoh butir soal mata pelajaran dasar desain grafis berikut (lebih lengkapnya ada di Lampiran 12 halaman 140):

Tabel 8. Distribusi Efektivitas Pengecoh Butir Soal Dasar Desain Grafis

| No | Kategori | No Butir | Jumlah | Presentase |
|----|-------------|--|--------|------------|
| 1 | Sangat Baik | - | 0 | 0% |
| 2 | Baik | 30 | 1 | 2,5% |
| 3 | Cukup Baik | 8, 10, 11, 15, 16, 25, 27, 39, 40 | 9 | 22,5% |
| 4 | Kurang Baik | 2, 5, 13, 14, 18, 19, 20, 21, 22, 23, 24, 26, 28, 33, 36, 37 | 16 | 40% |
| 5 | Tidak Baik | 1, 3, 4, 6, 7, 9, 12, 17, 29, 31, 32, 34, 35, 38 | 14 | 35% |

Berikut Gambar 7 diagram lingkaran hasil analisis kesukaran butir soal mata pelajaran dasar desain grafis



Gambar 7. Distribusi Soal berdasarkan aspek Efektivitas Pengecoh

B. Pembahasan

Dalam pembahasan ini akan membahas secara rinci tentang hasil analisis butir soal pilihan ganda mata pelajaran Dasar Desain Grafis SMK Muhammadiyah 1 Bambanglipuro dengan menggunakan program *ANATES 4.09*. Kemudian untuk membuktikan perhitungan hasil program *ANATES* maka butir soal dapat diuji dengan rumus yang diasumsikan digunakan didalam program *ANATES* yang ditinjau dari aspek validitas, reliabilitas, tingkat kesukaran, daya pembeda, dan efektivitas. Berikut adalah pembahasan dari hasil analisis tersebut :

1. Validitas

Validitas butir soal merupakan ukuran yang menunjukkan tingkat kesahihan butir soal. Butir soal dikatakan valid atau tidaknya berdasarkan perbandingan hasil analisis butir soal tersebut berupa nilai (r) terhadap tafsiran harga koefisien korelasi. Analisis validitas bertujuan untuk mengkaji kesahihan instrumen penilaian sebagai alat yang mengukur apa yang seharusnya diukur.

Dalam penelitian ini, butir soal diuji dengan program *ANATES 4.09*. Hasil perhitungan yang ada di Lampiran 8 halaman 136, kemudian dibandingkan

dengan r_{tabel} pada taraf signifikansi 5%. Perbandingan tersebut menghasilkan dua kategori valid dan tidak valid.

Untuk mengetahui hasil analisis ANATES relevan atau tidak, dapat dilakukan dengan membandingkan hasil analisis dengan rumus korelasi biserial sebagai berikut:

$$y_{pbi} = \frac{M_p - M_t}{S_t} \sqrt{\frac{p}{q}}$$

Keterangan :

- y_{pbi} = koefisien korelasi biserial
- M_p = rerata skor dari subjek yang menjawab betul bagi item yang dicari validitasnya
- M_t = rerata skor total
- S_t = standar deviasi dari skor total proporsi
- p = proporsi siswa yang menjawab benar
($p = \frac{\text{banyak siswa yang menjawab benar}}{\text{jumlah seluruhnya siswa}}$)
- q = proporsi siswa yang menjawab salah ($q = 1 - p$)

sedangkan untuk mencari standar deviasi total (S_t) dapat dilakukan dengan rumus berikut ini:

$$S_t = \sqrt{\frac{(\sum X_t^2)}{N} - \frac{(\sum X_t)^2}{N^2}}$$

Keterangan :

- X_t = Skor total dari subjek yang menjawab betul
- N = Jumlah subjek
- S_t = Standar deviasi total

Indeks *korelasi point biserial* (Y_{pbi}) merupakan cara penghitungan validitas item dengan item skor 1 dan 0 saja. Setelah mendapatkan nilai koefisien korelasi dari hasil perhitungan, kemudian hasil perhitungan tersebut akan

dibandingkan dengan nilai r tabel pada taraf signifikansi 5% dengan derajat kebebasan berdasarkan jumlah peserta didik yang diteliti.

Sebagai sampel, analisis validitas butir soal dilakukan pada butir soal nomor 4 dan 8 sebagai berikut :

8. Tanda Mata di samping kiri nama layer disebut:
 - a. Link/ Unlink
 - b. Visible/ Unvisible (jawaban)
 - c. Lock/ UnLock
 - D. Distribute
 - E. Fill

4. Hal-hal yang dapat dilakukan pada saat kita menggunakan photoshop, kecuali :
 - a. Memasukkan atau mengimpor suara (jawaban)
 - b. Menggandakan gambar
 - c. Memberikan efek gambar
 - d. Memperbaiki iritasi mata merah pada foto

Soal pilihan ganda dikerjakan oleh 40 siswa kelas x Multimedia Bambanglipuro. Diketahui skor total siswa yaitu 996 sedangkan jumlah dari hasil kuadrat skor tiap siswa adalah 25408. Pada soal nomor 8 ternyata dari 40 orang peserta didik, 26 orang menjawab benar dan 14 orang menjawab salah. Rerata skor dari semua subjek yang menjawab soal nomor 8 sebesar 700. Berikut ini adalah perhitungan validitas soal no.8.

Yang pertama dilakukan adalah mencari standar deviasi total terlebih dahulu.

$$S_t = \sqrt{\frac{(\sum X_t^2)}{N} - \left(\frac{\sum X_t}{N}\right)^2}$$

$$S_t = \sqrt{\frac{(25408)}{40} - \left(\frac{996}{40}\right)^2}$$

$$S_t = \sqrt{635.2 - 620.01}$$

$$S_t = \sqrt{15.1}$$

$$S_t = 3.88$$

Jadi nilai standar deviasi total dari perangkat soal tersebut adalah 3.80.

Setelah standar deviasi diketahui, kemudian pengerjaan dilanjutkan ke pencarian koefisien korelasi biserial.

$$(No. 8) y_{pbi} = \frac{M_p - M_t}{S_t} \sqrt{\frac{p}{q}}$$

$$(No. 8) y_{pbi} = \frac{\frac{700}{26} - \frac{996}{40}}{3,88} \sqrt{\frac{\frac{26}{40}}{1 - \frac{26}{40}}}$$

$$(No. 8) y_{pbi} = \frac{26.92 - 24,9}{3,88} \sqrt{\frac{0,65}{0,35}}$$

$$(No. 8) y_{pbi} = 0,5388 \times 1,363$$

$$(No. 8) y_{pbi} = 0,707$$

Jadi nilai koefisien korelasi biserial dari butir nomor 8 adalah 0,707.

Pada soal nomor 4 diketahui dari 40 orang peserta didik, 39 orang menjawab benar dan 1 orang menjawab salah. Rerata skor dari semua subjek yang menjawab soal nomor 4 sebesar 979. Berikut ini adalah perhitungan validitas soal no.4.

$$(No. 4) y_{pbi} = \frac{M_p - M_t}{S_t} \sqrt{\frac{p}{q}}$$

$$(No. 4) y_{pbi} = \frac{\frac{975}{39} - \frac{996}{40}}{3,8} \sqrt{\frac{\frac{39}{40}}{1 - \frac{39}{40}}}$$

$$(No. 4) y_{pbi} = \frac{25 - 24,9}{3,8} \sqrt{\frac{0,975}{0,025}}$$

$$(No. 4) y_{pbi} = 0,026 \times 6,24$$

$$(No. 4) y_{pbi} = 0,160$$

Jadi nilai koefisien korelasi biserial dari butir nomor 4 adalah 0,160.

Kemudian untuk perhitungan menggunakan ANATES pada butir soal nomor 8 menghasilkan koefisien korelasi sebesar 0,707. Perhitungan tersebut identik dengan perhitungan rumus yang menghasilkan nilai 0,707. Pada butir soal nomor 4 menghasilkan koefisien korelasi sebesar 0,16 yang mana perhitungan tersebut identik dengan perhitungan rumus yang menghasilkan nilai 0,160. Dari hasil tersebut dapat disimpulkan bahwa perhitungan ANATES sesuai dengan rumus dan dapat dibuktikan ketepatannya.

Setelah mengetahui hasil koefisien korelasi dari dua soal tersebut, kemudian yang dilakukan adalah membandingkan dengan r_{tabel} . Perbandingan ini digunakan untuk menafsirkan koefisien korelasi. Butir soal yang dianalisis berjumlah 40 butir sehingga nilai $n = 40$ dan *degree of freedom* (derajat kebebasan) memiliki rumus $df = N-2$, maka dengan $df = 38$ representasi tabel r dengan taraf signifikansi 5% diperoleh nilai sebesar 0,312. Dengan nilai tersebut maka dapat dinyatakan valid jika koefisien korelasi sama atau lebih dengan nilai dari r_{tabel} tersebut. Sebaliknya apabila koefisien korelasi kurang dari nilai dari r_{tabel} , maka dapat dinyatakan tidak valid cek.

Berdasarkan hal tersebut maka, butir soal no.8 dinyatakan valid karna 0,707 lebih besar dari 0,312 dan butir soal no.4 dinyatakan tidak valid karna 0,16 lebih kecil dari 0,312.

Dari hasil analisis validitas seluruh butir soal menggunakan ANATES, pada 40 butir soal dinyatakan bahwa 20 soal (50%) dinyatakan valid dan 20 soal (50%) dinyatakan tidak valid. Dengan hasil ini maka dapat disimpulkan bahwa soal pilihan ganda ujian akhir semester genap mata pelajaran Dasar Desain Grafis kelas X Multimedia SMK Muhammadiyah 1 Bambanglipuro termasuk perangkat soal yang cukup baik berdasarkan hasil analisis dari aspek validitasnya yang menunjukkan angka 50%.

Dari analisis diatas dapat diketahui faktor apa saja yang mempengaruhi validitas soal. Sebagai contoh, penyebab soal nomor 8 dinyatakan valid adalah faktor kesesuaian tingkat kesulitan soal dengan kemampuan siswa. Hal ini dapat dibuktikan dengan pola sebaran jawaban siswa. Sepuluh dari 11 anak dengan kemampuan tinggi (pintar) dapat menjawab benar, sedangkan 9 anak dari 11 anak dengan kemampuan rendah (kurang pintar) menjawab salah (Lampiran 10 hal 138). Artinya, soal tersebut dapat membedakan mana kemampuan siswa. Hal ini sejalan dengan fungsi soal secara sumatif yaitu “memberikan kedudukan siswa diantara siswa lainnya”. jadi artinya soal tersebut dapat mengukur apa yang seharusnya diukur yaitu klasifikasi kemampuan siswa terhadap siswa lain. Maka dari itu soal dinyatakan valid.

Tindak lanjut yang dilakukan kepada soal no.8 adalah menganalisis soal tersebut berdasarkan tiga aspek analisis butir secara kuantitatif yaitu efektivitas

pengecoh, daya pembeda, dan tingkat kesukaran. Berdasarkan analisis tersebut, soal no.8 layak dimasukkan kedalam bank soal tanpa revisi dengan kualitas sangat baik.

Untuk soal nomor 4, dimana dapat dijawab oleh 39 orang tapi tidak dinyatakan valid. Soal no.4 dinyatakan tidak valid karna soal tersebut tersebut tidak dapat mengukur apa yang seharusnya diukur. Ini disebabkan faktor jawaban soal no.4 yang mudah diprediksi. Dapat dibuktikan pada soal no.4 jumlah siswa yang menjawab benar secara signifikan. Artinya, soal tersebut tidak dapat membedakan mana siswa yang pintar, mana siswa yang kurang pintar. Sedangkan fungsi soal secara sumatif adalah “memberikan kedudukan siswa diantara siswa lainnya”. jadi artinya soal tersebut tidak dapat mengukur apa yang seharusnya diukur yaitu klasifikasi kemampuan siswa terhadap siswa lain. Maka dari itu soal dinyatakan tidak valid.

Jawaban yang mudah diprediksi ini berhubungan dengan aspek konstruksi soal yang hanya menampilkan 4 opsi jawaban dari 5 opsi jawaban yang seharusnya. Hal ini memperkuat kedudukan soal yang tidak valid.

Walaupun soal no.4 valid dalam hal isi karna merepresentasikan kompetensi dasar tentang penjelasan fungsi fitur pengolahan gambar bitmap (Lampiran 4 halaman 127). Namun perlu di kembalikan pada hukum awal validitas butir soal yaitu mengukur apa yang hendak diukur. Artinya soal yang valid adalah soal yang sesuai dengan fungsi dan tujuannya. Bila soal tersebut lolos validitas isi, belum tentu soal tersebut dapat mengklasifikasi siswa seperti soal no.4.

Tindak lanjut yang dapat dilakukan kepada soal no.4 yaitu menganalisis soal tersebut berdasarkan tiga aspek analisis butir secara kuantitatif terlebih dahulu. Dari analisis tersebut dapat diketahui bahwa soal no.4 sebaiknya dibuang karena dinyatakan tidak valid serta gagal dalam tiga aspek analisis butir soal.

Soal no.4 dinyatakan gagal dalam analisis butir soal karena diketahui faktor yang mempengaruhi validitas soal adalah jawaban yang mudah diprediksi, disini menyangkut aspek pengecoh yang buruk. Dengan pengecoh yang buruk maka soal dinyatakan sangat mudah, disini menyangkut aspek kesukaran soal. Dengan soal yang sangat mudah maka tidak dapat membedakan tingkatan siswa pintar dan kurang pintar, disini menyangkut aspek pembeda. Berdasarkan penjelasan diatas, maka bila menemukan kasus seperti soal no.4 dapat dipastikan soal harus dibuang.

Kemudian terkait analisis butir soal secara keseluruhan, untuk memberikan nilai terhadap aspek validitas, maka butir soal yang dinyatakan dalam kategori valid akan diberi nilai 1 sedangkan yang dinyatakan dalam kategori tidak valid diberi nilai 0.

2. Reliabilitas

Analisis reliabilitas bertujuan untuk menunjukkan instrumen dapat memberikan hasil pengukuran secara konsisten. Pengukuran tersebut dilakukan pada seluruh butir soal dalam satu kesatuan. Soal yang telah diuji kemudian dibandingkan dengan indeks reliabilitas. Indeks reliabilitas yang menjadi patokan adalah minimal 0,70 untuk kategori reliabilitas tinggi yang bersumber dari pernyataan Amirono dan Daryanto.

Analisis reliabilitas perangkat soal ini menggunakan program ANATES. Kemudian untuk membuktikan perhitungan hasil program ANATES, maka perangkat soal dapat diuji menggunakan rumus *Kuder-Ricahardson*, KR-20 berikut :

$$r_{11} = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum pq}{s^2} \right)$$

Keterangan:

r_{11} = indeks reliabilitas tes secara keseluruhan
 p = proporsi respons benar
 q = proporsi respons salah
 $\sum pq$ = jumlah hasil perkalian p dan q
 k = banyak butir soal
 s = standar deviasi $\longrightarrow s^2$ = variasi skor-skor tes

serta untuk mencari variasi dapat menggunakan rumus berikut :

$$S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}$$

Keterangan :

S = Standar deviasi
 x = Simpangan X dan \bar{X} , yang dicari dari $X - \bar{X}$
 S^2 = Varians, selalu dituliskan dalam bentuk kuadrat, karena standar deviasi kuadrat
 N = Banyaknya subjek pengikut tes

Untuk lebih jelas dapat diperhatikan perhitungan indeks reliabilitas tes sebagai berikut :

Soal pilihan ganda Dasar Desain Grafis, dikerjakan oleh 40 siswa kelas x Multimedia Banglipo. Butir soal berjumlah 40. Diketahui skor total siswa yaitu 996 sedangkan jumlah dari hasil kuadrat skor tiap siswa adalah 25408. Pada soal nomor 1 ternyata dari 40 orang peserta didik, 33 orang menjawab benar dan 7

orang menjawab salah. Dengan proporsi respons $pq = 6,906$ dan memiliki variasi 15,19. Maka reliabilitas soal dapat diketahui pada Tabel 9 berikut:

Tabel 9. Data persebaran jawaban butir soal no.1 dan no.40

| No.Subjek | No.1 | No.40 |
|-----------|------|-------|
| 1 | 1 | 0 |
| 2 | 1 | 1 |
| 3 | 1 | 0 |
| 4 | 1 | 0 |
| 5 | 1 | 0 |
| ... | ... | ... |
| ... | ... | ... |
| ... | ... | ... |
| 37 | 1 | 1 |
| 38 | 1 | 1 |
| 39 | 1 | 1 |
| 40 | 1 | 0 |
| Total | 33 | 17 |

Pertama yang dilakukan sebelum menghitung indeks reliabilitas adalah mencari variasi (S^2) dari perangkat soal.

$$S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}$$

$$S^2 = \frac{25408 - \frac{(996)^2}{40}}{40}$$

$$S^2 = \frac{25408 - 24800.4}{40}$$

$$S^2 = \frac{607.6}{40}$$

$$S^2 = 15.19$$

Jadi variasi yang didapat dari perhitungan tersebut adalah 15.19. kemudian untuk menghitung indeks reliabilitas perangkat soal sebagai berikut:

$$r_{11} = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum pq}{S^2} \right)$$

$$r_{11} = \left(\frac{40}{40-1} \right) \left(1 - \frac{\sum \left(\frac{33}{40} \right) \left(1 - \frac{33}{40} \right) + \dots + \left(\frac{17}{40} \right) \left(1 - \frac{17}{40} \right)}{15,19} \right)$$

$$r_{11} = (1,025) \left(1 - \frac{\sum (0,83)(0,18) + \dots + (0,43)(0,38)}{15,19} \right)$$

$$r_{11} = (1,025) \left(1 - \frac{6,906}{15,19} \right)$$

$$r_{11} = (1,025)(1 - 0,454)$$

$$r_{11} = (1,025)(0,545)$$

$$r_{11} = 0,558$$

Jadi indeks reliabilitas perangkat soal sebesar 0,558.

Selanjutnya, dari hasil analisis menggunakan ANATES didapatkan indeks reliabilitas pada perangkat soal sebesar 0,54. Bila dibandingkan dengan hasil perhitungan menggunakan rumus diatas maka dapat disimpulkan bahwa perhitungan ANATES identik dengan rumus (0,558) dan dapat dibuktikan keandalannya.

Kemudian dalam menafsirkan reliabilitas tes dengan cara membandingkan dengan patokan nilai 0,70 dari pendapat milik Amirono. Bila hasil hitung lebih besar atau sama dengan dari 0,70 maka reliabilitas tes dianggap tinggi. Sedangkan, bila hasil hitung lebih kecil dari 0,70 maka reliabilitas tes dianggap rendah. Karena memiliki nilai reliabilitas tes secara keseluruhan lebih rendah dari 0,70 yaitu 0,54. Maka dapat disimpulkan, soal tersebut memiliki tingkat reliabilitas yang rendah.

Dari analisis diatas dapat diketahui faktor yang mempengaruhi reliabilitas soal tersebut adalah kemampuan siswa. Hal ini dapat dilihat dari sebaran jawaban

siswa yang tidak konsisten dalam menjawab soal sukar maupun mudah. Ini dapat dibuktikan pada soal nomor 15 (Lampiran 21 halaman 174) sebagai sampel dimana soal tersebut bertipe soal C1 yang berarti mengukur ingatan siswa. Dengan soal yang jelas menanyakan tipe gambar Raster dan jawaban yang lingkupnya jelas yaitu tipe gambar bitmap serta dapat ditemukan di silabus (Lampiran 4 halaman 127) tentang raster. Namun, siswa masih kebingungan dalam menjawab soal.

Bila dilihat dari faktor soal maka kesukaran merupakan faktor terbesar. Soal tipe C1 sangat sederhana dan mudah dikerjakan jika siswa ingat tentang lingkup pertanyaan tersebut. Sebaliknya, bila tidak ingat maka potensi siswa menjawab salah semakin besar. kesalahan yang terjadi pada soal pilihan ganda Dasar Desain Grafis adalah semua soal pilihan gandanya bertipe C1 yang memiliki karakteristik soal kategori mudah. Artinya, penyebab soal memiliki reliabilitas lemah karna kesukarannya condong ke arah mudah (Lampiran 20 halaman 173).

Kemudian faktor kesukaran dan siswa dalam menjawab memiliki efek pada pola sebaran skor dalam kelompok. Sebaran skor dari pengerjaan soal pilihan ganda Dasar Desain Grafis memiliki rerata sebesar 62. Ini masih terbilang kurang jika dibandingkan dengan KKM (kriteria ketuntasan minimal) yang berjumlah 75. Semakin kecil penyebaran skor maka semakin kecil pula indeks reliabilitas yang diperoleh.

Dengan mengetahui faktor yang mempengaruhi reliabilitas tersebut, maka dapat dilakukan tindakan yaitu menyeimbangkan kesukaran soal dengan membuat

variasi tipe soal diatas level yang sekedar menguji ingatan siswa. Hal ini dilakukan agar dapat mengukur secara menyeluruh aspek kognitif siswa. Contohnya dalam hal pemahaman, analisis maupun penerapan. Jadi siswa yang kurang baik dalam mengingat bisa diukur dengan soal tipe lain yang sesuai.

Berdasarkan penjelasan diatas maka dapat dijadikan sebagai acuan dalam meningkatkan kualitas soal dari aspek reliabilitas. Terutama dalam proses pengembangan soal.

Kemudian untuk aspek reliabilitas tidak diberikan nilai 1 dan 0 karna perhitungan reliabilitas ini merupakan perangkat tes, bukan butir tes. Melaikan sebagai pendukung dalam menentukan kualitas butir soal secara keseluruhan.

3. Tingkat Kesukaran

Tingkat kesukaran adalah derajat yang menunjukkan sukar atau mudahnya suatu instrumen tes dinyatakan dalam bentuk indeks kesukaran (P). Analisis tingkat kesukaran bertujuan untuk mengukur besar derajat kesukaran soal yang akan diujikan. Dengan mengetahui derajat kesukaran soal, maka dapat menjadi dasar pertimbangan dalam menyusun soal tes.

Soal yang baik memiliki tingkat kesukaran yang tidak terlalu sukar atau tidak terlalu mudah. Karna soal yang terlalu sukar dapat membuat siswa patah semangat karena diluar kemampuannya. Sedangkan soal yang terlalu mudah dapat membuat peserta didik tidak termotivasi dalam usaha memecahkan masalah dalam soal tersebut.

Tingkat kesukaran butir soal juga memiliki hubungan dengan daya pembeda. Jika butir soal memiliki kesukaran yang tinggi maka daya pembedanya

akan rendah, demikian pula jika butir soal terlalu mudah maka tidak akan memiliki daya pembedanya. Oleh karena itu, sebaiknya tingkat kesukaran soal itu dipertahankan dalam batas yang mampu memberikan daya pembeda.

Analisis tingkat kesukaran butir soal ini menggunakan program ANATES. Kemudian untuk membuktikan perhitungan hasil program ANATES, maka butir soal dapat diuji menggunakan rumus berikut :

$$P = \frac{B}{JS}$$

Keterangan:

P = indeks kesukaran atau indeks fasilitas

B = banyaknya siswa yang menjawab butir soal itu dengan benar

JS = jumlah seluruh siswa peserta soal

Sebagai sampel, analisis tingkat kesukaran dilakukan pada butir soal nomor 8, 22, dan 29 sebagai berikut :

8. Tanda Mata di samping kiri nama layer disebut:
- | | |
|---------------------------------|---------------|
| A. Link/ Unlink | D. Distribute |
| B. Visible/ Unvisible (jawaban) | E. Fill |
| C. Lock/ UnLock | |

22. Untuk memilih warna yang terdapat pada bidang kerja, dapat menggunakan tool :
- A. Sub Select
 - B. Eye dropper (jawaban)
 - C. Perspective
 - D. Colour Mixer
 - E. Pointer

29. Untuk mengatur ukuran bidang kerja Photoshop digunakan :
- | | |
|--------------------------|----------------------------------|
| A. Image > Image Size | D. Image > Canvas Size (jawaban) |
| B. Image > Mode | E. Image > Edit Canvas |
| C. Image > Rotate Canvas | |

Dari 40 siswa yang mengerjakan soal nomor 8 diatas, yang menjawab benar sebanyak 26 siswa sedangkan 14 siswa menjawab salah. Untuk soal nomor

22, yang menjawab benar hanya 2 siswa sedangkan 38 siswa menjawab salah. Untuk soal nomor 29, yang menjawab benar sebanyak 35 siswa sedangkan 5 siswa menjawab salah. Dengan menggunakan rumus diatas, maka indeks kesukaran atau P dari tiap soal tersebut adalah :

$$(no. 8)P = \frac{B}{JS} = \frac{26}{40} = 0,65$$

$$(no. 22)P = \frac{B}{JS} = \frac{2}{40} = 0,05$$

$$(no. 29)P = \frac{B}{JS} = \frac{35}{40} = 0,875$$

Jadi hasil dari P atau indeks kesukaran butir soal nomor 8 adalah 0,65 atau sama dengan 65%, hasil indeks kesukaran untuk butir soal nomor 22 adalah 0,05 atau sama dengan 5%, dan hasil indeks kesukaran untuk butir soal nomor 29 adalah 0,875 atau sama dengan 87,5%,.

Kemudian untuk perhitungan menggunakan ANATES pada butir soal nomor 8 menghasilkan indeks kesukaran sebesar 65%. Pada butir soal nomor 22 menghasilkan indeks kesukaran sebesar 5%. Kemudian Pada butir soal nomor 29 menghasilkan indeks kesukaran sebesar 87,5%. Bila dibandingkan dengan hasil perhitungan menggunakan rumus maka dapat disimpulkan bahwa perhitungan ANATES sesuai dengan rumus dan dapat dibuktikan ketepatannya.

Kemudian sesuai dengan tafsir indeks kesukaran:

0,00 – 0,29 : sukar
 0,30 – 0,69 : sedang
 0,70 – 1,00 : mudah

Maka butir soal nomor 8 termasuk kategori sedang, untuk butir soal nomor 22 termasuk kategori sukar, dan untuk butir soal nomor 29 termasuk kategori mudah.

Dari analisis diatas dapat diketahui faktor apa saja yang mempengaruhi tingkat kesukaran soal. Sebagai contoh, penyebab soal nomor 8 dinyatakan tingkat kesukaran sedang adalah faktor konstruksi soal. Ditinjau dari konstruksi soal, pertanyaan tentang gambar mata tanpa melampirkan gambar objek yang ditanya disamping soal, menyebabkan level kesukaran soal meningkat karna siswa diminta untuk menyatakan fungsi fitur hanya dari deskripsi bentuk fitur tersebut. Hal ini dapat dibuktikan dari 40 siswa yang menjawab benar sebanyak 26 siswa.

Tindak lanjut yang dilakukan kepada soal no.8 yaitu menganalisis berdasarkan dua aspek analisis butir secara kuantitatif lainnya, efektivitas pengecoh dan daya pembeda. Berdasarkan analisis tersebut, soal no.8 layak dimasukan ke bank soal tanpa revisi karna masuk dalam kategori sangat baik.

Kemudian penyebab soal nomor 22 dinyatakan sukar adalah faktor materi tes yang tidak sesuai dengan pemahaman siswa. Ini dapat dibuktikan dari jawaban siswa terhadap soal tersebut. Dari total 40 siswa hanya 2 siswa yang dapat menjawab benar. Padahal materi sudah sesuai dengan silabus (Lampiran 4 halaman 127) yakni fitur-fitur pengolahan gambar bitmap. Kemungkinan besar, siswa tidak memperhatikan cara memilih warna yang terdapat pada bidang kerja ketika praktik pembelajaran.

Kemudian dari aspek sebaran jawaban, dapat diketahui (Lampiran 12 halaman 140) mayoritas siswa memilih jawaban a dan d. Itu artinya pilihan

jawaban tersebut terlalu mengecoh siswa. Ini disebabkan kata “memilih warna” pada soal diartikan siswa sebagai *select* dan *color* yang merupakan bagian dari pilihan jawaban a (*Sub select*) dan d (*Colour mixer*).

Tindak lanjut yang dilakukan kepada soal no.22 adalah mengubah pilihan jawaban c dan d agar memperbesar kemungkinan siswa menjawab benar atau dapat juga dibuang. Meninjau soal yang baik tingkat kesukarannya adalah soal yang tidak terlalu mudah dan tidak terlalu sukar. Sedangkan soal no.22 tergolong sangat sukar maka lebih baik dibuang.

Kemudian penyebab soal nomor 29 dinyatakan mudah adalah faktor materi yang sesuai dengan kemampuan seluruh siswa. Ini dapat dibuktikan dari jawaban siswa terhadap soal tersebut. Dimana mayoritas siswa dapat menjawab benar soal tersebut. Artinya soal tersebut terlalu mudah.

Tindak lanjut yang dilakukan kepada soal no.29 adalah membuangnya, karna meninjau soal yang baik tingkat kesukarannya adalah soal yang tidak terlalu mudah dan tidak terlalu sukar. Diluar dari itu lebih baik dihapus.

Dari perhitungan diatas, dapat diketahui hal yang menentukan sukar atau mudahnya sebuah butir soal adalah banyaknya siswa yang menjawab benar soal tersebut. Makin banyak siswa yang berhasil menjawab soal dengan benar maka makin mudah soal tersebut dan sebaliknya.

Perhitungan diatas merupakan gambaran tentang perhitungan pada aspek tingkat kesukaran. Kemudian dari hasil analisis tingkat kesukaran pada seluruh butir soal yang dilakukan dengan ANATES menunjukan 5 soal (12,5%) dinyatakan sukar, 18 soal (45%) dinyatakan sedang, dan 17 soal (42,5%)

dinyatakan mudah. Berdasarkan indeks kesukaran yang berbanding 2,5:5:2,5 yang memiliki arti soal ideal memiliki proporsi tingkat kesukaran mudah 25%, sedang 50% dan sukar 25%, maka soal pilihan ganda ujian akhir semester genap mata pelajaran Dasar Desain Grafis kelas X belum ideal.

Berdasarkan hasil tersebut, maka perlu dilakukan tindak lanjut agar butir soal yang akan digunakan selanjutnya bisa mendekati indeks kesukaran yang proporsional dengan cara:

- a. Untuk butir soal kategori cukup (dalam kategori baik) terdapat sebanyak 45%. Tindak lanjut yang dapat dilakukan yaitu menyimpan di bank soal untuk dapat digunakan kembali karna masuk dalam batas 50% proporsi ideal dalam kategori cukup. Namun dengan catatan harus sesuai dengan materi yang diberikan.
- b. Untuk butir soal kategori sukar dapat ditambah jumlahnya dari 12,5% agar dapat digunakan dalam memenuhi kuota proporsional sejumlah 25% sesuai indeks kesukaran dengan perlakuan evaluasi terhadap kalimat, petunjuk dan istilah yang tidak jelas. Jika tidak sesuai dengan materi yang diberikan maka sebaiknya dibuang.
- c. Untuk butir soal kategori mudah perlu adanya pemilahan dan pengurangan soal karna soal kategori mudah berjumlah 45% dari total butir soal artinya belum mencukupi kuota proporsional sesuai indeks kesukaran. Pemilahan butir soal kategori mudah juga perlu memperhatikan alternatif pilihan jawaban yang dipasangkan pada butir soal tersebut. Jangan sampai “terlalu ketara” atau “terlalu mudah diketahui” oleh peserta tes.

Kemudian untuk mendapatkan hasil analisis secara keseluruhan maka dari butir soal yang dinyatakan dalam kategori sedang akan diberi nilai 1 dan yang dinyatakan dalam kategori sukar atau mudah diberi nilai 0.

4. Daya Pembeda

Analisis daya pembeda bertujuan untuk mengetahui kualitas butir soal dalam membedakan antara siswa yang berkemampuan tinggi dengan siswa yang berkemampuan rendah dalam hal penguasaan materi. Semakin tinggi koefisien daya pembeda suatu butir soal, semakin mampu butir soal tersebut membedakan antara peserta didik yang menguasai kompetensi dengan peserta didik yang kurang menguasai kompetensi.

Patokan dalam penentuan kategori analisis ini adalah indeks diskriminasi dimana memiliki pembeda positif hingga pembeda negatif. Indeks diskriminasi adalah angka yang menunjukkan besarnya daya pembeda. Untuk menghitung indeks diskriminasi dapat menggunakan rumus berikut:

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B$$

Keterangan:

- J_A = banyaknya peserta kelompok atas
- J_B = banyaknya peserta kelompok bawah
- B_A = banyaknya peserta kelompok atas yang menjawab soal dengan benar
- B_B = banyaknya peserta kelompok bawah yang menjawab soal dengan benar
- P_A = proporsi peserta kelompok atas yang menjawab benar (ingat, P sebagai indeks kesukaran)
- P_B = proporsi peserta kelompok bawah yang menjawab benar

Sebagai sampel, analisis daya pembeda dilakukan pada butir soal nomor 8 dan 39 sebagai berikut :

8. Tanda Mata di samping kiri nama layer disebut:
- A. Link/ Unlink
 - B. Visible/ Unvisible (jawaban)
 - C. Lock/ UnLock
 - D. Distribute
 - E. Fill

39. Mengatur besar kecilnya tampilan ukuran gambar dalam lembar kerja /kanvas melalui sebuah salinan miniatur gambar merupakan fungsi dari....
- A. Info pallette
 - B. Color pallette
 - C. History pallette
 - D. Actions pallette
 - E. Navigator pallette (jawaban)

Soal dikerjakan oleh 40 siswa kelas X Multimedia Bambanglipuro. Tes tersebut terdiri dari 40 soal. Setelah hasil tes tersebut diperiksa, kemudian disusun kedalam peringkat untuk menentukan 27% siswa yang termasuk kelompok pandai (*upper group*) dan 27% siswa yang termasuk kelompok kurang (*lower group*).

Untuk soal nomor 8 kita peroleh hasil : yang menjawab benar dari kelompok pandai ada 10 siswa, sedangkan dari kelompok kurang ada 1 siswa. Untuk soal nomor 39 kita peroleh hasil : yang menjawab benar dari kelompok pandai 1 siswa, sedangkan dari kelompok kurang, ada dua siswa. Untuk lebih jelasnya dapat dilihat pada Tabel 10 berikut.

Tabel 10. Kelompok atas dan bawah untuk nomor soal 8 dan 39

| Kelompok Atas | | | Kelompok Bawah | | |
|---------------|------|-------|----------------|------|-------|
| No.Subjk | No.8 | No.39 | No.Subjk | No.8 | No.39 |
| 1 | 1 | 0 | 1 | 1 | 1 |
| 2 | 1 | 1 | 2 | 0 | 0 |
| 3 | 1 | 0 | 3 | 0 | 0 |
| 4 | 1 | 0 | 4 | 0 | 0 |
| 5 | 1 | 0 | 5 | 0 | 0 |
| 6 | 0 | 0 | 6 | 0 | 0 |
| 7 | 1 | 0 | 7 | 0 | 0 |
| 8 | 1 | 0 | 8 | 0 | 0 |
| 9 | 1 | 0 | 9 | 0 | 0 |
| 10 | 1 | 0 | 10 | 0 | 0 |
| 11 | 1 | 0 | 11 | 0 | 1 |
| total | 11 | 1 | total | 1 | 2 |
| rerata | 0,91 | 0,09 | rerata | 0,09 | 0,18 |

Dengan menggunakan rumus diatas, maka indeks diskriminasi atau D dari tiap soal tersebut adalah :

$$(no. 19)D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = \frac{10}{11} - \frac{1}{11} = 0,909 - 0,0909 = 0,8181$$

$$(no. 39)D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = \frac{1}{11} - \frac{2}{11} = 0,0909 - 0,1818 = -0,0909$$

Jadi hasil dari D atau indeks daya beda butir soal nomor 8 adalah 0,8181 atau sama dengan 81,81%, dan hasil indeks daya beda untuk butir soal nomor 39 adalah -0,0909 atau sama dengan -9,09%.

Kemudian analisis daya pembeda pada penelitian ini menggunakan program ANATES. Kemudian untuk membuktikan perhitungan hasil program ANATES, maka butir soal dapat diuji dengan membandikan hasil perhitungan menggunakan rumus diatas. Perhitungan menggunakan ANATES pada butir soal nomor 8 menghasilkan indeks daya beda sebesar 81,82%. Pada butir soal nomor 39 menghasilkan indeks daya beda sebesar -9,09%. Berdasarkan hasil tersebut dapat disimpulkan bahwa perhitungan ANATES sesuai dengan rumus dan dapat dibuktikan ketepatannya.

Kemudian sesuai dengan tafsir indeks daya beda:

- 0,00 – 0,20 : jelek (*poor*)
- 0,21 – 0,40 : cukup (*satisfactory*)
- 0,41 – 0,70 : baik (*good*)
- 0,71 – 1,00 : baik sekali (*excellent*)
- Nilai negatif : Sangat tidak baik

Maka butir soal nomor 8 termasuk kategori Sangat baik dengan nilai 81,81 dan untuk butir soal nomor 39 termasuk kategori sangat jelek karna bernilai negatif dengan nilai -0,09.

Dari analisis diatas dapat diketahui faktor apa saja yang mempengaruhi daya pembeda soal. Sebagai contoh, penyebab soal nomor 8 dinyatakan dapat membedakan dengan sangat baik adalah faktor kesesuaian tingkat kesulitan tes terhadap kemampuan siswa. Hal ini dapat dibuktikan dengan pola sebaran jawaban siswa. Sepuluh dari 11 anak dengan kemampuan tinggi (pintar) dapat menjawab benar, sedangkan 9 anak dari 11 anak dengan kemampuan rendah (kurang pintar) menjawab salah (Lampiran 10 hal 138).

Tindak lanjut yang dilakukan kepada soal no.8 adalah menganalisis soal tersebut berdasarkan dua aspek analisis butir secara kuantitatif lainnya, yaitu efektivitas pengecoh dan tingkat kesukaran serta aspek validitas untuk memastikan soal tersebut dapat digunakan kembali dengan atau tanpa revisi, atau dibuang. Berdasarkan analisis tersebut, soal no.8 layak dimasukan kedalam bank soal tanpa revisi karna masuk dalam kategori sangat baik.

Kemudian penyebab soal nomor 39 dinyatakan daya pembeda sangat tidak baik adalah tingkat kesulitan soal yang tidak sesuai dengan pemahaman siswa. Ini dapat dibuktikan dari jawaban siswa terhadap soal tersebut. Dari total 40 siswa hanya 9 siswa yang dapat menjawab benar, terdiri dari 1 siswa pintar, 6 siswa cukup pintar dan 2 siswa kurang pintar. Padahal materi sudah sesuai dengan silabus (Lampiran 4 halaman 127) yakni fitur-fitur pengolahan gambar bitmap.

Faktor pilihan jawaban yang hampir sama juga berpengaruh. Pada soal no.39, pilihan jawaban mayoritas menggunakan kata (*pallette*). Hal tersebut dalam meningkatkan kesulitan soal karna membuat kemungkinan siswa terkecoh lebih

besar. ini dapat dilihat dari sebaran jawaban siswa yang mayoritas memilih pilihan jawaban a dan b (Lampiran 12 halaman 140).

Namun, faktor terbesar yang mempengaruhi daya pembeda soal no.39 tetap kemampuan siswa. Bila siswa mengetahui jawabannya, maka siswa dapat menjawab dengan benar tanpa harus terganggu dengan pilihan jawaban lainnya. Karna soal ini merupakan soal (C1) tipe mengingat yang artinya soal tersebut sangat mudah dijawab bila mengetahui jawabannya.

Kemudian, tindak lanjut yang dilakukan kepada soal no.39 adalah menghapusnya. Hal ini dilakukan karna soal no.39 memiliki indeks pembeda bernilai negatif. Artinya soal tersebut berfungsi terbalik dalam membedakan siswa berkemampuan tinggi dan rendah.

Perhitungan diatas merupakan bagian perhitungan pada aspek daya pembeda. Dari hasil analisis daya pembeda yang dilakukan dengan ANATES menunjukan 7 soal (17,5%) dinyatakan sangat jelek, 11 soal (27,5%) dinyatakan jelek, 8 soal (20%) dinyatakan cukup, 10 soal (25%) dinyatakan baik, dan 4 soal (10%) dinyatakan baik sekali.

Atas dasar hasil analisis daya pembeda tersebut, maka perlu tindak lanjut yang dapat dilakukan terhadap butir soal tersebut yaitu dengan (1) menghapus butir soal yang tidak berfungsi dalam aspek daya pembeda (sangat jelek) karena nilai soal tersebut terbalik, (2) memperbaiki butir soal berkategori daya beda lemah (jelek) sebelum dimasukan ke bank soal dengan melihat konstruk dari soal : pertanyaan harus tegas dan mudah dipahami, tidak menjebak, tidak ambigu, polajawaban mudah ditebak, pilihan jawaban yang kurang baik. (3) memasukan

ke bank soal untuk butir soal berkategori daya beda kuat (cukup, baik dan sangat baik).

Dari penjelasan diatas, terdapat 5 kategori mulai dari baik sekali, baik, cukup, jelek, dan sangat jelek. Kemudian untuk mendapatkan hasil analisis secara keseluruhan maka dari butir soal yang dinyatakan dalam kategori cukup, baik, atau baik sekali, akan diberi nilai 1 sedangkan untuk butir soal dalam kategori jelek atau sangat jelek akan bernilai 0.

5. Efektivitas Pengecoh

Efektivitas pengecoh ukuran alternatif jawaban yang digunakan dalam bentuk soal pilihan ganda. Analisis efektivitas pengecoh bertujuan untuk mengetahui berfungsi atau tidaknya suatu pilihan jawaban dalam soal, dengan cara melihat pola sebaran jawaban soal dari para siswa.

Pengecoh yang berfungsi dengan baik merupakan pengecoh yang mempunyai daya tarik yang besar kepada siswa yang kurang memahami atau kurang menguasai materi. Sedangkan pengecoh yang jelek, adalah pengecoh yang tidak dipilih sama sekali oleh siswa karena terlihat mencolok.

Untuk mengetahui efektivitas pengecoh maka perlu menghitung indeks pengecoh. Indeks pengecoh adalah angka yang menunjukkan besarnya efektivitas pengecoh. Indeks pengecoh dapat dihitung menggunakan rumus berikut:

$$IP = \frac{p}{(N - B)/(n - 1)} \times 100\%$$

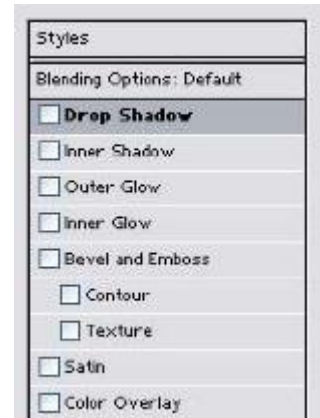
Keterangan :

IP = indeks pengecoh
p = jumlah peserta didik yang memilih pengecoh
N = jumlah peserta didik yang ikut soal

- B = jumlah peserta didik yang menjawab benar pada soal tersebut
 n = jumlah alternatif jawaban
 1 = bilangan tetap

Sebagai sampel, analisis efektivitas pengecoh dilakukan pada butir soal nomor 40 sebagai berikut :

40. Pada gambar di samping untuk memberikan efek timbul maka menggunakan...
- Color Overlay
 - Satin
 - Inner Glow
 - Inner Shadow
 - Bevel and emboss (jawaban)



Soal pilihan ganda nomor 40 dikerjakan oleh 40 siswa kelas X Multimedia Banganglipuro. Memiliki alternatif jawaban (a,b,c,d,e) kunci jawaban pada butir soal tersebut adalah “e”. Ternyata dari 40 orang peserta didik, 17 orang menjawab benar dan 23 orang menjawab salah. Berikut ini adalah contoh pencarian indeks pengecoh pilihan jawaban “a” pada soal no.40.

$$IP(a) = \frac{p}{(N - B)/(n - 1)} \times 100\%$$

$$IP(a) = \frac{4}{(40 - 17)/(5 - 1)} \times 100\%$$

$$IP(a) = \frac{4}{(23)/(4)} \times 100\%$$

$$IP(a) = 69.5\%$$

Jadi indeks pengecoh pilihan jawaban “a” pada butir soal nomor 40 sebesar 69,5% dibulatkan menjadi 70%

Kemudian sesuai dengan tafsir indeks daya beda:

Sangat baik IP = 76% - 125%

Baik IP = 51% - 75% atau 126% - 150%

Kurang baik IP = 26% - 50% atau 151% - 175%

Jelek IP = 0% - 25% atau 176% - 200%

Sangat Jelek IP = lebih dari 200%

Maka pilihan jawaban “a” pada butir soal nomor 40 termasuk kategori

baik. Kemudian, untuk melihat nilai indeks pengecoh pada opsi jawaban lain pada

butir soal no.40 maka dapat ditinjau dari Tabel 11 berikut.

Tabel 11. Indeks pengecoh butir soal no.40

| Alternatif jawaban | A | B | C | D | E |
|----------------------------------|------|-------|-------------|--------------|---------------|
| Distribusi jawaban peserta didik | 4 | 1 | 5 | 13 | 17 |
| Indeks pengecoh | 70% | 17% | 87% | 226% | ** |
| Kualitas pengecoh | + | -- | ++ | --- | ** |
| Kategori | baik | jelek | Sangat baik | Sangat jelek | Kunci jawaban |

Kemudian untuk perhitungan menggunakan ANATES pada butir soal nomor 40 menghasilkan mategori untuk pilihan jawaban “a” yaitu baik, pilihan jawaban “b” yaitu masuk dalam kategori jelek, pilihan jawaban “c” masuk dalam kategori sangat baik, pilihan jawaban “d” masuk dalam kategori sangat jelek, dan pilihan jawaban “e” tidak memiliki kategori karna merupakan kunci jawaban dan tidak termasuk pengecoh jawaban.

Analisis efektivitas pengecoh pada soal ini menggunakan program ANATES. Kemudian untuk membuktikan perhitungan hasil program ANATES, maka dapat membandingkan hasil kriteria ANATES dengan hasil kriteri yang dihitung menggunakan rumus. Melihat hasil perhitungan dengan rumus diatas serta membandingkan dengan hasil dari ANATES, dapat disimpulkan bahwa perhitungan ANATES sesuai dengan rumus dan dapat dibuktikan ketepatannya dalam uji indeks pengecoh.

Setelah mengetahui kategori pilihan jawaban dalam butir soal nomor 40, kemudian yang dilakukan adalah menghitung jumlah pengecoh yang berfungsi guna mengetahui efektivitas pengecoh pada butir soal tersebut. Jika butir soal yang masuk dalam kategori cukup baik, baik, atau sangat baik, maka akan diberi nilai 1 sedangkan untuk butir soal yang masuk dalam kategori kurang baik atau tidak baik akan bernilai 0. Setelah itu kemudian di jumlah lalu dikonsultasikan dengan Tabel 12 dibawah ini.

Tabel 12. Kategori fungsi distraktor berdasar pengecoh yang berfungsi

| Jumlah pengecoh yang berfungsi | Efektivitas Pengecoh | Keterangan |
|--------------------------------|----------------------|-----------------|
| 0 | Tidak Baik | Dibuang |
| 1 | Kurang | |
| 2 | Cukup | Revisi |
| 3 | Baik | Masuk bank soal |
| 4 | Sangat Baik | |

Tabel diatas merupakan kategori fungsi distraktor menggunakan patokan yang diadaptasi dari skala *Likert*. Terdapat lima kategori dimulai dari sangat baik, baik, cukup baik, kurang baik, dan tidak baik.

Berdasarkan Tabel 12 diatas, maka pengecoh no.40 dinyatakan cukup baik dengan rincihan seperti Tabel 13.

Tabel 13. Kualitas pengecoh no.40

| Alternatif jawaban | A | B | C | D | E | Total | Kategori |
|--------------------|------|-------|-------------|--------------|---------------|-------|----------|
| Kategori | baik | jelek | Sangat baik | Sangat jelek | Kunci jawaban | | |
| Likert | 1 | 0 | 1 | 0 | ** | 2 | Cukup |

Dari analisis diatas dapat diketahui faktor apa saja yang mempengaruhi efektivitas pengecoh soal. Penyebab soal nomor 40 dinyatakan cukup baik dalam mengecoh adalah faktor kemampuan siswa. Soal ini bertipe (c1) yaitu mengingat.

Artinya soal ini sebenarnya sangat mudah jika siswa mengetahui jawabannya. Karna dari konstruksi pertanyaan sudah jelas, dan pilihan jawaban sudah jelas berbeda serta ada gambar yang mempermudah siswa mengingat. Artinya faktor yang menyebabkan pengecoh berfugsi baik adalah pemahaman siswa itu sendiri.

Tindak lanjut yang dilakukan kepada soal no.40 menerima pengecoh dengan revisi pada pengecoh b dan d dengan mengganti pengecoh tersebut. Namun karna faktor yang berpengaruh adalah faktor dari luar yaitu kemampuan siswa. Maka mengganti pengecoh tidak akan merubah kualitas soal secara signifikan.

Analisis di atas merupakan bagian dari analisis efektifitas secara keseluruhan. Dari hasil analisis efektivitas pengecoh menunjukkan 1 soal atau sebesar 2,5% dinyatakan masuk dalam kategori baik, 9 soal atau sebesar 22,5% masuk dalam kategori cukup baik, 16 soal atau sebesar 40% dinyatakan masuk dalam kategori kurang baik, 14 soal atau sebesar 35% dinyatakan masuk dalam kategori tidak baik. Sedangkan untuk kategori sangat baik, tidak ada butir soal yang masuk kriteria tersebut.

Berdasarkan seluruh penjelasan di atas, dapat disimpulkan bahwa soal pilihan ganda ujian akhir semester genap Pelajaran Dasar Desain Grafis kelas X berdasarkan efektivitas pengecoh masuk dalam kategori tidak baik yaitu sebesar 25%. Oleh karena itu harus ada evaluasi untuk soal berkategori kurang baik agar dapat digunakan kembali dengan melihat tata bahasa pengecoh agar lebih efektif, harus dilakukan penolakan soal berkategori tidak baik karna terlalu mencolok hingga tidak dipilih, dan penerimaan berkategori baik dan sangat baik.

Jika butir soal yang masuk dalam kategori cukup baik, baik, atau sangat baik, maka akan diberi nilai 1 sedangkan untuk butir soal yang masuk dalam kategori kurang baik atau tidak baik akan bernilai 0. Ini dilakukan untuk memberikan nilai terhadap aspek efektivitas pengecoh yang nanti sebagai acuan dalam menentukan kualitas butir soal secara keseluruhan.

6. Kualitas Butir Soal

Menurut penjelasan sebelumnya, aspek validitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh akan dikategorikan dalam bilangan biserial atau bernilai 1 dan 0 guna membedakan kualitas butir soal yang dapat digunakan kembali dengan yang tidak dapat digunakan kembali (lebih baik dibuang). sedangkan reliabilitas tidak masuk dalam kategori biserial ini karena nilai reliabilitas merupakan nilai perangkat soal, bukan nilai butir soal.

Hasil analisis butir soal dikategorikan menggunakan nilai 1 terhadap kategori butir soal yang dapat digunakan kembali dengan atau tanpa revisi terlebih dahulu, dan nilai 0 terhadap kategori butir soal yang tidak dapat digunakan atau lebih baik dibuang. berdasarkan kategori biserial tersebut, hasil analisis butir soal dapat dilihat dalam Tabel 14 berikut.

Tabel 14. Distribusi Biserial Hasil Analisis Butir Soal

| NO | Aspek | Kategori Butir Soal | 0 / 1 | Nomor | Jumlah | Persentase |
|----|-----------|---------------------|-------|---|--------|------------|
| 1 | Validitas | Valid | 1 | 1, 2, 3, 5, 8, 9, 11, 14, 16, 18, 19, 20, 21, 23, 26, 29, 30, 33, 37, 40 | 20 | 50% |
| | | Tidak Valid | 0 | 4, 6, 7, 10, 12, 13, 15, 17, 22, 24, 25, 27, 28, 31, 32, 34, 35, 36, 38, 39 | 20 | 50% |

Lanjutan ada di halaman selanjutnya

Lanjutan Tabel 14

| | | | | | | |
|---|----------------------|-------------------------------|---|--|----|-----|
| 2 | Daya Pembeda | Baik Sekali, Baik, Cukup | 1 | 1, 2, 3, 5, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 23, 26, 29, 33, 37, 40 | 22 | 55% |
| | | Jelek, Sangat Jelek | 0 | 4, 6, 7, 15, 17, 22, 24, 25, 27, 28, 30, 31, 32, 34, 35, 36, 38, 39 | 18 | 45% |
| 3 | Tingkat Kesukaran | Sedang | 1 | 3, 5, 6, 8, 11, 13, 15, 19, 21, 24, 26, 31, 32, 35, 36, 37, 38, 40 | 18 | 45% |
| | | Mudah, Sukar | 0 | 1, 2, 4, 7, 9, 10, 12, 14, 16, 17, 18, 20, 22, 23, 25, 27, 28, 29, 30, 33, 34, 39 | 22 | 55% |
| 4 | Efektivitas Pengecoh | Sangat Baik, Baik, Cukup Baik | 1 | 8, 10, 11, 15, 16, 25, 27, 30, 39, 40 | 10 | 25% |
| | | Kurang Baik, Tidak Baik | 0 | 1, 2, 3, 4, 5, 6, 7, 9, 12, 13, 14, 17, 18, 19, 20, 21, 22, 23, 24, 26, 28, 29, 31, 31, 33, 34, 35, 36, 37, 38 | 30 | 75% |

Sedangkan Reliabilitas perangkat soal, pada Tabel 15 sebagai berikut

Tabel 15. Reliabilitas Perangkat Soal

| NO | Aspek | Kategori Perangkat Soal | Nilai |
|----|--------------|-------------------------|-------|
| 1 | Reliabilitas | Lemah | 0,54 |

Berdasarkan hasil keseluruhan analisis butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dari aspek validitas, reliabilitas, tingkat kesukaran, daya pembeda dan efektivitas pengecoh, maka perlu dilakukan tindak lanjut.

Butir soal yang tidak sama sekali memenuhi empat kriteria yaitu: validitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh, maka butir soal tersebut termasuk butir soal yang memiliki kualitas sangat tidak baik.

Bila memenuhi satu kriteria dari keempat kriteria tersebut, maka butir soal tersebut termasuk butir soal yang memiliki kualitas tidak baik. Dengan kualitas

butir soal tersebut, harus diganti dengan butir soal yang baru karena butir soal tersebut tidak layak untuk dijadikan bahan revisi.

Bila memenuhi dua kriteria dari keempat kriteria tersebut, maka butir soal dinyatakan memiliki kualitas kurang baik oleh karena itu perlu adanya perbaikan pada kriteria-kriteria yang belum terpenuhi.

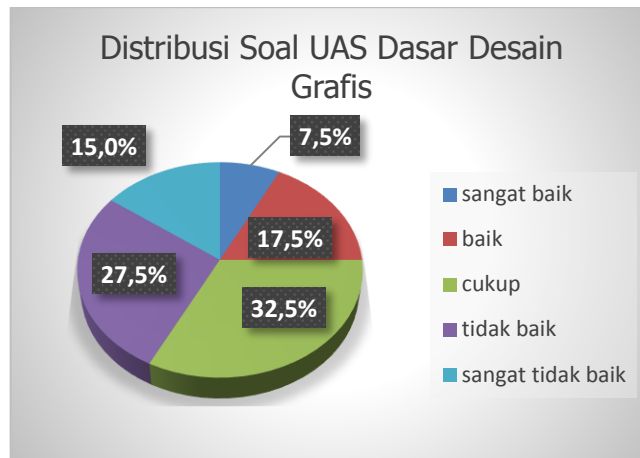
Bila memenuhi tiga kriteria dari keempat kriteria tersebut, maka butir soal dinyatakan memiliki kualitas baik namun perlu adanya perbaikan pada kriteria yang belum terpenuhi. Bila memenuhi semua kriteria dari keempat kriteria tersebut, maka butir soal dikatakan memiliki kualitas sangat baik. Selain syarat memenuhi empat kriteria tersebut, maka tes secara keseluruhan harus reliabel dengan ketentuan yang sudah dijelaskan sebelumnya.

Berdasarkan penjelasan di atas terdapat 3 butir soal (7,5%) dinyatakan sangat baik, 7 butir soal (17,5%) dinyatakan baik, 13 butir soal (32,5%) dinyatakan sangat cukup, 11 butir soal (27,5%) dinyatakan tidak baik, dan 6 butir soal (15%) dinyatakan sangat tidak baik. Rincian distribusi butir soal tersebut dapat dilihat dalam Tabel 16 distribusi kualitas butir soal mata pelajaran dasar desain grafis berikut (lebih lengkapnya ada di Lampiran 13 halaman 143):

Tabel 16. Distribusi Butir Soal Mata Pelajaran Dasar Desain Grafis

| No | Kategori | No Butir | Jumlah | Presentase | Revisi | Simpan di Bank Soal |
|----|-------------------|---|--------|------------|-------------|---------------------|
| 1 | Sangat Baik | 8,11,40 | 3 | 7,5% | Tidak perlu | Ya |
| 2 | Baik | 3, 5, 16, 19, 21, 26, 37 | 7 | 17,5% | Revisi | Belum |
| 3 | Cukup | 1, 2, 9, 10, 13, 14, 15, 18, 20, 23, 29, 30, 33 | 13 | 32,5% | Revisi | Belum |
| 4 | Tidak Baik | 6, 12, 24, 25, 27, 31, 32, 35, 36, 38, 39 | 11 | 27,5% | Dibuang | Tidak |
| 5 | Sangat Tidak Baik | 4, 7, 17, 22, 28, 34 | 6 | 15% | Dibuang | Tidak |

Berikut Gambar 8 diagram lingkaran hasil analisis daya pembeda butir soal mata pelajaran dasar desain grafis.



Gambar 8. Distribusi Soal UAS Dasar Desain Grafis

Berdasarkan diagram gambar 8 diatas, Maka kualitas perangkat soal Dasar Desain Grafis dinyatakan cukup baik dengan 57,5% butir soal yang dapat digunakan kembali dengan atau tanpa revisi terlebih dahulu.

Rincihan 57,5% butir soal yang dapat digunakan kembali yaitu 3 butir soal (7,5%) dinyatakan sangat baik, terdapat 7 butir soal (17,5%) dinyatakan baik, terdapat 13 butir soal (32,5%) dinyatakan cukup. Untuk soal yang tidak dapat digunakan kembali sebesar 42,5% soal yang terdiri dari 11 butir soal (27,5%) dinyatakan tidak baik dan 6 butir soal (15%) dinyatakan sangat tidak baik.

Berdasarkan Tabel 14 di atas dapat diketahui bahwa aspek Efektivitas Pengecoh merupakan penyebab kegagalan paling besar dengan 75% tidak efektif dari 100% penilaian efektivitas pengecoh pada semua butir soal. Diikuti aspek Tingkat Kesukaran dengan 55%, Validitas dengan 50%, dan Daya Pembeda dengan 45% dari 100% pengukuran.

Berdasarkan penjelasan di atas, untuk butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 dapat dilakukan tindak lanjut berikut: Butir soal yang masuk dalam kategori sangat baik dimasukkan dalam bank soal sebagai butir soal yang dapat digunakan kembali di waktu yang akan datang. Butir soal yang masuk dalam kategori baik dan cukup dapat digunakan kembali namun dengan syarat dilakukan revisi terlebih dahulu sesuai indikator kegagalannya dari segi validitas, reliabilitas, tingkat kesukaran, daya pembeda, atau efektivitas pengecoh. Butir soal yang masuk dalam kategori tidak baik dan sangat tidak baik disarankan untuk dibuang.

C. Keterbatasan Penelitian

Tentu ada keterbatasan yang ditemui dalam melaksanakan penelitian ini. ANATES 4.09 yang digunakan dalam kegiatan analisis butir soal pada penelitian ini, tidak mencantumkan sumber kriteria patokan untuk menetapkan kategori, sehingga hasil yang muncul perlu dikonsultasikan dengan teori yang ada di buku.

1. Dalam aspek Validitas yang dihasilkan oleh ANATES versi 4 menampilkan hasil ukur berupa signifikan, sangat signifikan, 'NAN', dan '-' dimana hal tersebut tidak sesuai dengan teori milik Arikunto, (2016:89) yang menyatakan hanya ada dua kategori yaitu signifikan dan tidak signifikan.
2. Pada aspek tingkat kesukaran dalam program ANATES versi 4 ber-kategori sangat sukar, sukar, sedang, mudah, sangat mudah. Namun kategori tersebut tidak diketahui sumber teorinya, maka karena itu peneliti menggunakan pendapat Farida (2017:156) dengan kategori sukar, sedang, mudah.

3. Dalam aspek daya pembeda hasil analisis ANATES versi 4 menampilkan indeks daya pembeda berupa nilai dalam persen (%) tanpa menampilkan tafsiran berupa kategori. Oleh karena itu, penelitian hanya mengambil hasil perhitungannya saja. Kemudian dikonsultasikan dengan klasifikasi yang dikemukakan oleh Arikunto, (2016:232)

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Berdasarkan hasil penelitian dan pembahasan mengenai analisis butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018 yang ditinjau dari aspek validitas, reliabilitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh, dapat disimpulkan bahwa kualitas perangkat soal Dasar Desain Grafis dinyatakan cukup baik dengan 57,5% butir soal dapat digunakan kembali dengan atau tanpa revisi terlebih dahulu.

Rincihan 57,5% butir soal yang dapat digunakan kembali yaitu 3 butir soal (7,5%) dinyatakan sangat baik, terdapat 7 butir soal (17,5%) dinyatakan baik, terdapat 13 butir soal (32,5%) dinyatakan cukup. Untuk soal yang dinyatakan baik dan cukup perlu revisi terlebih dahulu sebelum digunakan. Revisi tersebut dapat dilihat berdasarkan aspek yang belum terpenuhi dari validitas, reliabilitas, tingkat kesukaran, daya pembeda, dan efektivitas pengecoh.

Untuk 42,5% soal lainnya terdiri dari 11 butir soal (27,5%) dinyatakan tidak baik dan 6 butir soal (15%) dinyatakan sangat tidak baik. Kedua kategori ini disarankan untuk dibuang karena terdapat lebih dari tiga kegagalan dari aspek uji. Artinya soal tersebut tidak layak digunakan sebagai alat uji untuk siswa kelas X Multimedia SMK Muh. 1 Bambanglipuro.

Penyebab kegagalan terbesar butir soal Dasar Desain Grafis ini adalah efektivitas pengecoh yang dinyatakan buruk dengan 75% tidak efektif dari 100%

penilaian efektivitas pengecoh pada semua butir soal. Diikuti aspek tingkat kesukaran yang dinyatakan cukup baik dengan 55% kegagalan, validitas yang dinyatakan cukup baik dengan 50% kegagalan, dan daya pembeda yang dinyatakan cukup baik dengan 45% dari 100% pengukuran.

B. Implikasi

Berdasarkan kesimpulan di atas maka dapat diperoleh implikasi penelitian yaitu sebagai berikut.

Butir soal yang masuk dalam kategori valid dapat dipertahankan. Sebaliknya, soal yang tidak valid dapat dibuang atau digunakan kembali dengan perbaikan terlebih dahulu. Aspek penyusunan soal (menggunakan kalimat negatif, pertanyaan harus tegas, tidak menjebak, tidak bergantung pada butir sebelumnya) aspek kesesuaian materi (sesuai indikator dan tujuan pengukuran, batasan dan jawaban harus jelas, materi sesuai dengan jenis kelas) dan aspek bahasa (dengan kalimat yang komunikatif, tidak ambigu, dengan bahasa baku) adalah hal yang perlu ditingkatkan dalam perbaikan soal berkategori tidak valid agar dapat digunakan kembali.

Hasil analisis reliabilitas menunjukkan bahwa soal tersebut memiliki reliabilitas rendah. Untuk mengatasi hal tersebut dapat dilakukan penyeimbangan kesukaran soal dengan membuat variasi tipe soal diatas level yang sekedar menguji ingatan siswa atau C1. Hal ini dilakukan untuk membuat variasi tingkat kognitif soal. Agar bisa mengukur siswa dengan kemampuan kognitif selain mengingat dan meningkatkan sebaran skor siswa.

Pada tingkat kesukaran menunjukkan proporsi yang tidak seimbangan. Maka karena itu perlu dilakukan pengaturan proporsi soal sesuai dengan kuota proporsional indeks kesukaran. Butir soal berkategori baik dapat disimpan di bank soal. Sedangkan untuk kategori sukar dan mudah dapat dipilah untuk memenuhi kuota proporsional indeks kesukaran dengan syarat revisi. Soal yang dinyatakan sukar perlu dikurangi kesukarannya menuju kategori cukup untuk meningkatkan kualitas butir soal tersebut dengan mengubah kalimat dan petunjuk yang tidak jelas. Sedangkan untuk soal yang dinyatakan mudah perlu dipersulit untuk naik ke kategori cukup dengan mengubah *distractor* yang terlalu mudah diketahui.

Berdasarkan hasil analisis daya pembeda dapat dilakukan tindak revisi terhadap hasil analisis yang berkategori jelek, agar butir soal dapat berfungsi sebagai pembeda antara kelompok atas dan kelompok bawah dengan cara memerperhatikan konstruksi soal tersebut guna mempermudah pemahaman siswa dalam menjawab. Untuk kategori cukup, baik, dan baik sekali dapat digunakan kembali. Sedangkan untuk kategori sangat jelek, jangan digunakan karena tidak berfungsi.

Pada efektivitas pengecoh, menerima opsi jawaban pada kategori sangat baik dan baik, menulis ulang opsi pada kategori cukup baik dengan memerperhatikan tata bahasanya, serta mengganti opsi jawaban pada kategori kurang baik dan tidak baik, supaya dapat mengecoh siswa dalam memilih jawaban.

C. Saran

Berdasarkan hasil penelitian dan pembahasan mengenai analisis butir soal pilihan ganda Ujian Akhir Semester Mata Pelajaran Dasar Desain Grafis Kelas X jurusan Multimedia di SMK Muhammadiyah 1 Bambanglipuro tahun ajaran 2017/2018, maka ada beberapa saran yang diajukan sebagai berikut:

1. Bagi Guru

- a) Berdasarkan hasil analisis sudah diketahui kualitas butir soal tersebut, maka diharapkan untuk soal yang sudah memiliki kategori ‘sangat baik’ dapat dipertahankan untuk dijadikan alat ukur ujian. Sedangkan soal yang sudah ‘baik’ dan ‘cukup’ perlu dilakukan perbaikan sebelum dapat digunakan untuk alat ukur evaluasi. Perbaikan yang dilakukan berdasarkan aspek yang belum memenuhi syarat kualitas soal yaitu validitas, reliabilitas, tingkat kesukaran, daya pembeda, atau efektivitas pengecoh dari soal tersebut. Sedangkan untuk kategori ‘tidak baik’ dan ‘sangat tidak baik’ perlu dihapus.
- b) Memberikan kisi-kisi kepada siswa guna mengarahkan siswa terhadap lingkup tes. Mempelajari level-level soal kognitif untuk membuat soal bervariasi dalam mengukur siswa agar kemampuan siswa dapat diukur secara keseluruhan. Tidak hanya dengan soal bertipe hapalan atau C1.

2. Bagi Sekolah

Meningkatkan pengawasan terhadap evaluasi pembelajaran guna memastikan seluruh komponen evaluasi pembelajaran dapat berjalan baik. Serta memberikan kemampuan dan pengetahuan kepada guru tentang analisis butir soal, agar guru dapat membuat instrumen tes yang berkualitas.

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LAMPIRAN

Lampiran 1. Nilai UAS Gasal Dasar Desain Grafis Kelas X MM A



MUHAMMADIYAH MAJELIS PENDIDIKAN DASAR DAN MENENGAH SMK MUHAMMADIYAH 1 BAMBANGLIPURO

KOMPETENSI KEAHLIAN: TEKNIK KENDARAAN RINGAN
TEKNIK SEPEDA MOTOR
REKAYASA PERANGKAT LUNAK
MULTIMEDIA
TEKNIK PENGOLAHAN HASIL PERTANIAN

Terakreditasi: A
Terakreditasi: B
Terakreditasi: A
Terakreditasi: A
Terakreditasi: A

Kampus: Jl. Samas km. 2,3 Kanutan Sumbemulyo Bambanglipuro Bantul D.I. Yogyakarta 55764
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DAFTAR NILAI SEMESTER GASAL SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN PELAJARAN 2017/2018

Kelas : X MM A
Mata Diklat : Dasar Desain Grafis

| No. | No. Peserta | N A M A | N I L A I | | | | | | NILAI RAPORT |
|-----|-------------|------------------------------|-----------|------|------|------|-----|-----|--------------|
| | | | UH 1 | UH 2 | UH 3 | UH 4 | UTS | UAS | |
| 1 | 5386 | ABI SUKOCO | 90 | 85 | 75 | 80 | 75 | 80 | 79.38 |
| 2 | 5387 | APRI AJI PRASETYO | 85 | 90 | 95 | 75 | 80 | 75 | 79.06 |
| 3 | 5388 | ARIFIN BUDI SUSANTO | 90 | 95 | 95 | 75 | 95 | 85 | 88.44 |
| 4 | 5389 | ASSHOLLA DWI ARTIANA | 90 | 70 | 75 | 90 | 75 | 80 | 79.06 |
| 5 | 5390 | AYU PRASWATI | 85 | 90 | 75 | 90 | 80 | 85 | 83.75 |
| 6 | 5391 | BELLA MEGA SELVIA | 75 | 75 | 75 | 75 | 75 | 75 | 75.00 |
| 7 | 5392 | DIAH RAHMAWATI | 75 | 75 | 75 | 75 | 75 | 75 | 75.00 |
| 8 | 5393 | DIAN MUSHOLAWATI | 75 | 80 | 75 | 95 | 80 | 90 | 85.31 |
| 9 | 5394 | ERFAN ARDIYANTO | 85 | 95 | 75 | 80 | 95 | 90 | 89.69 |
| 10 | 5395 | FERI ARIYANTO | 85 | 85 | 95 | 75 | 80 | 75 | 78.75 |
| 11 | 5396 | FIKO EFRILENIO PAMUNGgaran | 90 | 80 | 95 | 90 | 75 | 80 | 80.94 |
| 12 | 5398 | INDAH LESTARI | 85 | 80 | 75 | 80 | 80 | 80 | 80.00 |
| 13 | 5399 | IQBAL AS'ADIL UMAM | 85 | 85 | 95 | 75 | 90 | 75 | 81.25 |
| 14 | 5400 | MEILANI KURNIAWATI | 75 | 75 | 75 | 75 | 75 | 75 | 75.00 |
| 15 | 5401 | MUHAMMAD HERNANDA | 90 | 85 | 95 | 95 | 95 | 95 | 94.06 |
| 16 | 5402 | NENG AYANG MARETTA | 85 | 75 | 75 | 80 | 75 | 80 | 78.44 |
| 17 | 5403 | NOVIA KHOLIFAH | 85 | 85 | 95 | 90 | 90 | 90 | 89.69 |
| 18 | 5404 | PIPIN NURMALIKA | 85 | 85 | 95 | 80 | 90 | 85 | 86.56 |
| 19 | 5405 | RIZKADILLA SEPTIRYAN ANGGRAI | 85 | 85 | 95 | 80 | 80 | 80 | 81.56 |
| 20 | 5406 | WINING SARI | 75 | 75 | 75 | 80 | 80 | 80 | 79.06 |
| 21 | 5407 | WIWIK WIDYASTUTI | 75 | 75 | 75 | 80 | 75 | 80 | 77.81 |
| 22 | 5408 | YULI SULASIH | 75 | 75 | 75 | 80 | 75 | 80 | 77.81 |
| 23 | 4916 | PRADIPTA BAGAS KURNIAWAN | 90 | 85 | 95 | 90 | 90 | 90 | 90.00 |

Mengetahui,
Kepala Sekolah

Bantul, 13 Desember 2017
Guru Mapel

Drs. H. Maryoto, M.Pd.
NIP. 19650522 198903 1 005

Aris Muthohar, ST
NBM. 1202 7607 1015226

Lampiran 2. Nilai UAS Gasal Dasar Desain Grafis Kelas X MM B



MUHAMMADIYAH MAJELIS PENDIDIKAN DASAR DAN MENENGAH SMK MUHAMMADIYAH 1 BAMBANGLIPURO

KOMPETENSI KEAHLIAN: TEKNIK KENDARAAN RINGAN
TEKNIK SEPEDA MOTOR
REKAYASA PERANGKAT LUNAK
MULTIMEDIA
TEKNIK PENGOLAHAN HASIL PERTANIAN

Terakreditasi: A
Terakreditasi: B
Terakreditasi: A
Terakreditasi: A
Terakreditasi: A

Kampus: Jl. Samas km. 2.3 Kanutan Sumbermulyo Bambanglipuro Bantul D.I. Yogyakarta 55764
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DAFTAR NILAI SEMESTER GASAL SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN PELAJARAN 2017/2018

Kelas : X MM B

Mata Diklat : Dasar Desain Grafis

| No. | No. Peserta | N A M A | NILAI | | | | | | NILAI RAPORT |
|-----|-------------|-------------------------|-------|------|------|------|-----|-----|--------------|
| | | | UH 1 | UH 2 | UH 3 | UH 4 | UTS | UAS | |
| 1 | 5409 | AGUNG SANTOSO | 80 | 90 | 75 | 80 | 90 | 85 | 85.31 |
| 2 | 5410 | ANNISA EKA SAFITRI | 80 | 90 | 95 | 90 | 90 | 90 | 89.69 |
| 3 | 5412 | DINO AFRIAN LUTFIYANTO | 80 | 95 | 95 | 90 | 95 | 90 | 91.25 |
| 4 | 5414 | FERI HIDAYAT | 75 | 75 | 75 | 75 | 75 | 75 | 75.00 |
| 5 | 5415 | HANDIKA ARIYANTO | 75 | 75 | 75 | 75 | 75 | 75 | 75.00 |
| 6 | 5416 | IDA NUR ADVAYANTI | 80 | 90 | 95 | 90 | 90 | 90 | 89.69 |
| 7 | 5417 | IKMAL SYAHRUL SAPUTRA | 95 | 90 | 95 | 90 | 90 | 75 | 83.13 |
| 8 | 5418 | MEILANA DWI WIDYARINI | 80 | 85 | 95 | 90 | 80 | 85 | 84.38 |
| 9 | 5419 | MUHAMMAD GUNTUR DWI MAL | 80 | 75 | 75 | 80 | 75 | 75 | 75.63 |
| 10 | 5420 | NURINDRA ANDRYANI | 80 | 85 | 95 | 80 | 80 | 80 | 81.25 |
| 11 | 5421 | PUTRA PERTAMA | 85 | 90 | 95 | 80 | 80 | 80 | 81.88 |
| 12 | 5422 | RENDRA AYU NUR SAFITRI | 85 | 95 | 95 | 90 | 95 | 75 | 84.06 |
| 13 | 5423 | RESTU ADITYA NUGRAHA | 85 | 90 | 95 | 90 | 90 | 90 | 90.00 |
| 14 | 5424 | RIDWAN TRI PAMUNGKAS | 85 | 85 | 95 | 90 | 90 | 90 | 89.69 |
| 15 | 5425 | RISA TRI YULIANA | 85 | 95 | 95 | 80 | 95 | 90 | 90.94 |
| 16 | 5427 | RITA DANTI ASMORO ASIH | 80 | 90 | 95 | 80 | 80 | 75 | 79.06 |
| 17 | 5428 | TRI AZMI YUSUF | 90 | 90 | 95 | 80 | 80 | 80 | 82.19 |
| 18 | 5429 | WAHYU WINANTO | 90 | 95 | 95 | 95 | 90 | 90 | 90.94 |
| 19 | 5430 | YELA AYU WULANDARI | 80 | 90 | 95 | 75 | 90 | 80 | 83.75 |

Mengetahui,
Kepala Sekolah

Bantul, 13 Desember 2017
Guru Mapel

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NBM. 1202 7607 1015226

Lampiran 3. Soal UAS Dasar Desain Grafis



**MUHAMMADIYAH MAJELIS PENDIDIKAN DASAR DAN MENENGAH
SMK MUHAMMADIYAH 1 BAMBANGLIPURO**

KOMPETENSI KEAHLIAN: TEKNIK KENDARAAN RINGAN
TEKNIK SEPEDA MOTOR
REKAYASA PERANGKAT LUNAK
MULTIMEDIA
TEKNIK PENGOLAHAN HASIL PERTANIAN

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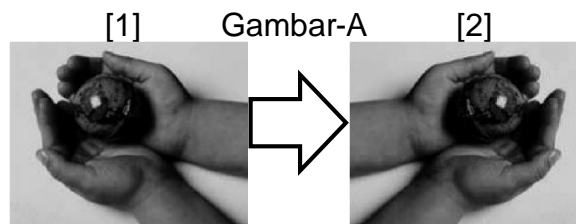
PENILAIAN AKHIR TAHUN Tahun Pelajaran 2017/2018

| | | |
|----------------|---|---------------------|
| MATA PELAJARAN | : | TP-3 |
| KOPETENSI | : | Dasar Desain Grafis |
| KELAS | : | X Multimedia |
| HARI/TANGGAL | : | Sabtu, 26 Mei 2018 |
| JAM | : | 09.15 – 10.45 wib |
| WAKTU | : | 90 ‘ |

Pilihlah Jawaban yang benar !

5. Setiap pembuatan file baru pada Adobe PhotoShop kedalam Hardisk, secara otomatis akan menjadi file yang berektension/jenis file
 - a. JPS
 - b. JPG
 - c. CDR
 - d. PSD
6. Pengertian layer pada Photo Shop adalah
 - A. Mengatur Resolusi
 - B. Mengatur Bidang Kerja
 - C. Modifikasi Warna
 - D. Memberi Efek Khusus
 - E. Memberi Lapisan pada Bidang Kerja
7. File ekstension untuk photoshop pada saat disimpan dapat berupa file-file dibawah ini, kecuali
 - a. JPG
 - b. PSD
 - c. MPG
 - d. GIF
8. Hal-hal yang dapat dilakukan pada saat kita menggunakan photoshop, kecuali :
 - a. Memasukkan atau mengimpor suara
 - b. Menggandakan gambar
 - c. Memberikan efek gambar

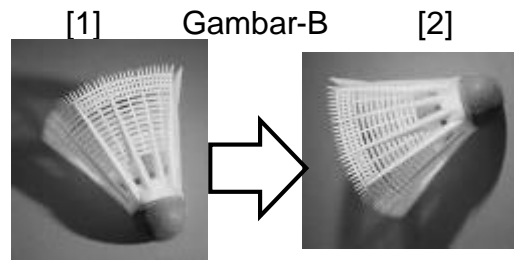
- d. Memperbaiki iritasi mata merah pada foto
9. Pada jam keenam, Tool ini digunakan untuk menggambar beragam objek, baik yang bersudut tumpul maupun yang bersudut tajam. Contohnya adalah pada proses pembuatan logo, siluet atau icon.
- Poligon tool
 - Pen tool
 - Custom Save Tool
 - Rectagle tool
10. Tool yang digunakan untuk menggeser bidang kerja yaitu :
- Pointer Tool
 - Move Tool
 - Croop Tool
 - Hand Tool
 - Marquee tool
11. Untuk membuat Shape yang bersudut banyak dan shape berbentuk bintang,adalah tool yang dibutuhkan, prinsip penggunaannya sama dengan Rectangle, rounded rectangle & ellipse tool. Perbedaannya adalah dalam penggunaan tool ini pengguna harus menentukan terlebih dahulu jumlah sisi dari shape yang akan dibuat.
- Poligon tool
 - Pen tool
 - Custom Shape Tool
 - Rectagle tool
12. Tanda Mata di samping kiri nama layer disebut:
- Link/ Unlink
 - Visible/ Unvisible
 - Lock/ UnLock
 - Distribute
 - Fill
13. Untuk mengubah besar-kecilnya ukuran gambar, dapat dilakukan dari menu :
- Image, Image Size
 - Image, Size
 - Image, Pixel Size
 - Edit, Image Size



14. Pada Gambar-A di atas : Untuk membalik gambar [1] menjadi gambar [2] dapat dilakukan dari menu :
- Edit, Image, Rotate or Flip, Flip Horizontal
 - Image, Flip Image, Horizontal
 - Image, Rotate or Flip, Flip Horizontal
 - Image, Image Rotation Canvas, Flip Canvas Horizontal
15. Fungsi Lasso Tool adalah ...
- Membuat garis
 - Menyeleksi bagian objek yang akan diedit
 - Mengubah warna gradasi
 - Membuat teks
 - Membuat objek elips

16. Perintah berikut ini yang digunakan untuk mensejajarkan Layer adalah :

- a. Distribute
- b. Link
- d. Align
- e. Masking Layer
- c. Arrange



17. Pada Gambar-B di atas : Untuk merubah posisi gambar dari [1] menjadi gambar [2] dapat dilakukan dari menu :

- a. Image, Rotate Image, 90° CW
- b. Image, Rotate or Flip, Rotate Left
- c. Image, Image Rotation, 90° CCW
- d. Edit, Image, Rotate 90° CW

18. Tanda Mata di samping kiri nama layer disebut:

- a. Link/ Unlink
- b. Visible/ Unvisible
- c. Lock/ UnLock
- d. Distribute
- e. Fill

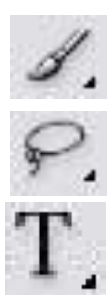
19. Dalam grafis yang disebut Raster adalah

- A. Gambar bitmap
- B. Gambar vektor
- C. Gambar Ilustrasi
- D. Gambar Tiga dimensi
- E. Gambar Dua dimensi

20. Menu yang digunakan untuk menambah area bidang kerja yaitu :

- a. Create Zise
- b. Zise
- c. Make Zise
- d. Image Zise
- e. Canvas Zise

21. Ikon di bawah ini yang berfungsi untuk membuat teks yaitu...



- a. d.
- b. e.



c.

18. Jumlah pixel per satuan luas disebut

- A. Pixel
- B. Resolusi
- C. Intensitas
- D. Ddua tone
- E. Mode

19. Untuk membuat duplikat(cloning) pada sebagian area gambar ketempat area yang lain digunakan toolbar :
- Paste Stamp Tool
 - Duplicate Tool
 - Clone Stamp Tool
 - Clone Tool
20. Pada PhotoShop, untuk memisahkan Setiap gambar dan Setiap Teks perlu diletakkan pada layer yang berbeda. Layer dapat dibuat melalui menu ;
- Layer, New Layer
 - Insert, Layer
 - Image, New Layer
 - Insert, New Layer
21. Berikut ini yang merupakan hal yang menentukan kualitas dari gambar berbasis bitmap adalah
- Banyaknya warna yang digunakan
 - Terangnya warna
 - Menggunakan mode warna grayscale
 - Menggunakan mode warna CMYK
 - Resolusi, intensitas dan kedalaman warna
22. Untuk memilih warna yang terdapat pada bidang kerja, dapat menggunakan tool :
- Sub Select
 - Eye dropper
 - Perspective
 - Colour Mixer
 - Pointer
23. Untuk mengatur kecerahan, rona maka menu dan submenu yang dipilih adalah...
- Format-Adjusments-Levels
 - Image-Adjusments-Blur
 - Image-Adjusments-Levels
 - Image-Adjusments-Bevels
 - Image-Contour-Levels
24. Pemodelan warna yang didasarkan pada teknik pencetakan pada kertas yang dikenal dengan Separation Printing, adalah
- CMYK
 - RGB
 - Dua tone
 - Multiple tone
 - Bitmap
25. Untuk memberi warna pada garis tepi menggunakan...
- hand tool
 - eyedropper tool
 - paint bucket tool
 - stroke color
 - fill color
26. Submenu blur berada pada menu ...
- Image
 - Filter
 - Layer
 - Select
27. Pada PhotoShop untuk membuat seleksi pada gambar yang banyak sudut dan garis lurus digunakan toolbar :
- Line Tool
 - Freeform Tool
 - Polygonal Lasso Tool
 - Magic Wand Tool

28. Photoshop dapat menerima penggunaan beberapa model warna:

- a. RGB color model
- b. Lab color model
- c. CMYK color model
- d. font color
- e. Bitmap

29. Untuk mengatur ukuran bidang kerja Photoshop digunakan :

- D. Image > Image Size
- E. Image > Mode
- F. Image > Rotate Canvas
- D. Image > Canvas Size
- E. Image > Edit Canvas

30. Ikon laso tool Photoshop adalah

- A. 
- B. 
- C. 
- D. 
- E. 

31. Pada PhotoShop untuk membuat seleksi pada gambar berbentuk bebas, mengikuti lekukan bagian tepi gambar digunakan toolbar :

- a. Polygonal Lasso Tool
- b. Lasso Tool
- c. Magic Wand Tool
- d. Freeform Tool

32. Untuk menambahkan ketajaman gambar pada program photoshop dapat kita gunakan perintah...

- a. Blur Tool
- b. Sharpen Tool
- c. Smudge Tool
- d. Slice Tool
- e. Lasso Tool

33. Pada PhotoShop untuk membuat seleksi pada area gambar yang memiliki warna yang sama digunakan toolbar :

- a. Polygonal Lasso Tool
- b. Healing Tool
- c. Gradient Tool
- d. Magic Wand Tool

34. Untuk Menghilangkan/memotong bagian Foto yang tidak diperlukan sekaligus meluruskan Foto hasil scan yang miring dapat digunakan toolbar :


- a. Crop Tool
- b. Knife Tool
- c. Eraser Tool
- d. Cut Tool

35. Untuk membatasi proses editing hanya pada bagian-bagian tertentu dan menjaga agar bagian lain tidak tersentuh pada Photoshop kita memerlukan

- A. Layer
- B. Seleksi
- C. Filter
- D. Adjustment
- E. Transform

36. Untuk memilih image berdasarkan kesamaan warna, kita memerlukan ...

- A. Tool Lasso
- D. Tool Magic wand

- B. Tool Lasso Poligon
C. Tool Lasso magnetik
E. Tool Quick select
37. Berikut ini tool yang digunakan untuk menyeleksi suatu objek, kecuali
A. Lasso Tool
B. Magic Wand Tool
C. Rectangular Marquee Tool
D. Polygonal Tool
E. Pen Tool
38. Untuk memperbaiki bagian tertentu dari foto yang rusak atau catat, dapat dilakukan dengan cara menjiplak tekstur pada bagian lain yang masih bagus. Toolbar yang digunakan untuk memperbaikinya yaitu :
a. Magic Eraser Tool
b. Healing Brush Tool
c. Dodge Brush Tool
d. Sponge Eraser Tool
39. Mengatur besar kecilnya tampilan ukuran gambar dalam lembar kerja /kanvas melalui sebuah salinan miniatur gambar merupakan fungsi dari....
a. Info pallette
b. Color pallette
c. Actions pallette
d. Navigator pallette
e. History pallette
40. Pada gambar di samping untuk memberikan efek timbul maka menggunakan...
a. Color Overlay
b. Satin
c. Inner Glow
d. Inner Shadow
e. Bevel and emboss
- 

Jawablah Soal di bawah ini !

Lampiran 4. Silabus Dasar Desain Grafis

SILABUS

| | | |
|---------------------|---|---|
| Nama Sekolah | : | SMK Muhammadiyah 1 Bambanglipuro |
| Bidang Keahlian | : | Teknologi Informasi dan Komunikasi |
| Kompetensi Keahlian | : | Multimedia |
| Mata Pelajaran | : | Dasar Desain Grafis |
| Durasi (Waktu) | : | 144 JP |
| Kelas/Semester | : | X (Sepuluh)/I (Satu) dan II (Dua) |
| KI-3 (Pengetahuan) | : | Memahami, menerapkan, menganalisis, dan mengevaluasi tentang pengetahuan faktual, konseptual, operasional dasar, dan metakognitif sesuai dengan bidang dan lingkup kerja Teknik Komputer dan Jaringan pada tingkat teknis, spesifik, detil, dan kompleks, berkenaan dengan ilmu pengetahuan, teknologi, seni, budaya, dan humaniora dalam konteks pengembangan potensi diri sebagai bagian dari keluarga, sekolah, dunia kerja, warga masyarakat nasional, regional, dan internasional |
| KI-4 (Keterampilan) | : | <ul style="list-style-type: none">• Melaksanakan tugas spesifik dengan menggunakan alat, informasi, dan prosedur kerja yang lazim dilakukan serta memecahkan masalah sesuai dengan bidang kerja <i>Teknik Komputer dan Jaringan</i>. Menampilkan kinerja di bawah bimbingan dengan mutu dan kuantitas yang terukur sesuai dengan standar kompetensi kerja.• Menunjukkan keterampilan menalar, mengolah, dan menyaji secara efektif, kreatif, produktif, kritis, mandiri, kolaboratif, komunikatif, dan solutif dalam ranah abstrak terkait dengan pengembangan dari yang dipelajarinya di sekolah, serta mampu melaksanakan tugas spesifik di bawah pengawasan langsung.• Menunjukkan keterampilan mempersepsi, kesiapan, meniru, membiasakan, gerak mahir, menjadikan gerak alami dalam ranah konkret terkait dengan pengembangan dari yang dipelajarinya di sekolah, serta mampu melaksanakan tugas spesifik di bawah pengawasan langsung |

| Kompetensi Dasar | Indikator Pencapaian Kompetensi | Materi Pokok | Alokasi Waktu (JP) | Kegiatan Pembelajaran | Penilaian |
|--|--|---|--------------------|--|--|
| 3.1 Mendiskusikan unsur-unsur tata letak berupa garis, ilustrasi, tipografi, warna, gelap-terang, tekstur, dan ruang 4.1 Menempatkan unsur-unsur tata letak berupa garis, ilustrasi, tipografi, | 3.1.1 Menjelaskan unsur-unsur tata letak garis. 3.1.2 Menguraikan unsur-unsur warna 3.1.3 Mendeskripsikan tekstur dan ruang. 4.1.1 Menetapkan tata letak unsur-unsur garis. | <ul style="list-style-type: none"> Unsur-unsur desain grafis dan prinsipnya: Karakteristik, kegunaan, dan makna warna. Warna sebagai representasi dari alam Warna sebagai | | <ul style="list-style-type: none"> Mengamati untuk mengidentifikasi dan merumuskan masalah tentang unsur-unsur desain grafis. <p>Mengumpulkan data tentang tata letak unsur-unsur dalam desain grafis. Mengolah data tentang tata</p> | <p>Pengetahuan :</p> <ul style="list-style-type: none"> Tes tertulis <p>Keterampilan :</p> <ul style="list-style-type: none"> Penilaian unjuk kerja Observasi |
| Kompetensi Dasar | Indikator Pencapaian Kompetensi | Materi Pokok | Alokasi Waktu (JP) | Kegiatan Pembelajaran | Penilaian |
| warna, gelap-terang, tekstur, dan ruang | 4.1. Menetapkan tata letak unsur-unsur warna 4.1.3 Menetapkan tata letak unsur-unsur warna | komunikasi, dan ekspresi. | | <p>letak unsur-unsur dalam desain grafis.</p> <p>☐ Mengomunikasikan tentang tata letak unsur-unsur dalam desain grafis.</p> | |

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| <p>3. Mendiskusikan fungsi, dan unsur warna CMYK dan RGB</p> <p>4. Menempatkan berbagai fungsi, dan unsur warna CMYK dan RGB.</p> | <p>3.2. Menguraikan fungsi warna</p> <p>3.2. CMYK dan RGB</p> <p>2 Membandingkan warna CMYK dengan RGB</p> <p>4.2. Melakukan kombinasi warna CMYK dan RGB. Menunjukkan penempatan warna sesuai fungsi.</p> | <ul style="list-style-type: none"> • Fungsi warna CMYK dan RGB. • Persamaan dan perbedaan warna CMYK dengan RGB. • Kombinasi warna CMYK dngan RGB | | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan merumuskan masalah tentang unsur warna CMYK dan RGB. Mengumpulkan data tentang fungsi unsur warna CMYK dan RGB. Mengolah data tentang fungsi unsur warna CMYK dan RGB. Mengomunikasikan tentang fungsi unsur warna CMYK dan RGB. | <p>Pengetahuan : <input type="checkbox"/> Tes tertulis</p> <p>Keterampilan :</p> <ul style="list-style-type: none"> • Penilaian unjuk kerja • Obervasi |
| <p>3. Mendiskusikan prinsipprinsip tata letak, antara lain :</p> <p>4. proporsi, irama (rythm), keseimbangan, kontras, kesatuan (unity), dan harmoni dalam pembuatan desain grafis</p> <p>Menerapkanhasilprinsipprinsip tata letak, antara lain : proporsi, irama (rythm), keseimbangan, kontras, kesatuan (unity), dan harmoni dalam pembuatan desain grafis</p> | <p>3.3. Menjelaskan prinsip tata letak desain.</p> <p>3.3. Menguraikan prinsip desain</p> <p>4.3. Mengintegrasikan prinsip kedalam desain.</p> <p>4.3. Menunjukkan desain sesuai prinsip.</p> | <ul style="list-style-type: none"> • kesatuan (Unity) and keselarasan (harmony) • Keseimbangan (Balance) • Proporsi (Proportion) • Irama (Rhythm) • Penekanan/ fokusdan emphasis • Contrast dan variety. • Repetisi (Repetition) | | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan merumuskan masalah <input type="checkbox"/> tentang prinsip tata letak. Mengumpulkan data tentang prinsip tata letak desain. Mengolah data tentang prinsip tata letak desain. Mengomunikasikan tentang prinsip tata letak desain. | <p>Pengetahuan : <input type="checkbox"/> Tes tertulis</p> <p>Keterampilan :</p> <ul style="list-style-type: none"> • Penilaian unjuk kerja • Obervasi |
| <p>3.4 Mendiskusikan berbagai</p> | <p>3.4.1 Menjelaskan f</p> | <p><input type="checkbox"/> Macam-macam format</p> | | <p><input type="checkbox"/> Mengamati untuk</p> | <p>Pengetahuan :</p> |

| Kompetensi Dasar | Indikator Pencapaian Kompetensi | Materi Pokok | Alokasi Waktu (JP) | Kegiatan Pembelajaran | Penilaian |
|--|--|--|--------------------|---|---|
| 4. format gambar 4 Menempatkan berbagi format gambar | 3.4. Menguraikan berbagai format. 4.4. Membandingkan format gambar. 4.4. Menyimpan gambar dengan format pilihan. | gambar. • Fungsi dan manfaat format gambar. • Perbedaan fungsi setiap format. | | mengidentifikasi dan merumuskan masalah tentang format gambar. Mengumpulkan data tentang berbagai format gambar. Mengolah data <input type="checkbox"/> tentang berbagai format gambar. <input type="checkbox"/> Mengomunikasikan tentang berbagai format gambar. | • Tes tertulis Keterampilan : • Penilaian unjuk kerja • Observasi |
| 3. Menerapkan prosedur 5 scanning gambar/ ilustrasi/teks dalam desain 4. dalam desain 5 Melakukan proses scanning gambar/ ilustrasi/teks dengan alat scanner dalam desain | 3.5. Menjelaskan fungsi scanning. 3.5. Menguraikan prosedur 4.5. scanning. 4.5. Memilih gambar untuk discan. 2 Menunjukkan hasil scanning. | • Jenis-jenis scanner. • Langkah-langkah scanning. • Kelebihan dan kekurangan proses scanning. | | • Mengamati untuk mengidentifikasi dan merumuskan masalah <input type="checkbox"/> tentang scanning. Mengumpulkan data tentang prosedur scanning. Mengolah data tentang prosedur scanning. Mengomunikasikan tentang prosedur scanning. | Pengetahuan : <input type="checkbox"/> Tes tertulis Keterampilan : • Penilaian unjuk kerja • Observasi |

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|---|--|--|---------------------------|--|--|
| 3. Menerapkan perangkat lunak pengolah gambar vektor 4. Menggunakan perangkat lunak pengolah gambar vektor | 3.6. Menjelaskan fungsi fitur-fitur pengolah gambar vektor. 3.6.2 Membandingkan gambar berdasarkan fitur. 4.6.2 Mengintegrasikan fitur dalam mengolah gambar vektor. Menunjukkan gambar vektor hasil pengolahan. | <ul style="list-style-type: none"> • Perangkat lunak pengolah gambar. • Mengolah gambar vektor dengan perangkat lunak. | | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan merumuskan masalah tentang pengolah gambar vektor. Mengumpulkan data tentang perangkat lunak pengolah gambar vektor. Mengolah data tentang perangkat lunak pengolah gambar vektor. Mengomunikasikan tentang perangkat lunak pengolah gambar vektor. | Pengetahuan : <ul style="list-style-type: none"> • Tes tertulis Keterampilan : <ul style="list-style-type: none"> • Penilaian unjuk kerja • Observasi |
| 3. Menerapkan manipulasi gambar vektor dengan | 3.7. Menjelaskan fungsi manipulasi gambar vektor. | <input type="checkbox"/> Manfaat manipulasi gambar vektor. | | <input type="checkbox"/> Mengamati untuk mengidentifikasi dan | Pengetahuan : <input type="checkbox"/> Tes tertulis |
| Kompetensi Dasar | Indikator Pencapaian Kompetensi | Materi Pokok | Alokasi Waktu (JP) | Kegiatan Pembelajaran | Penilaian |
| 4. menggunakan fitur efek 7 Manipulasi gambar vektor dengan menggunakan fitur efek | 3.7. Mengintegrasikan efek fitur 4.7. manipulasi pada gambar. 4.7.1 Membandingkan efek manipulasi pada gambar. Menunjukkan gambar hasil manipulasi. | <input type="checkbox"/> Teknik memanipulasi gambar vektor. | | merumuskan masalah tentang manipulasi gambar. Mengumpulkan data tentang efek manipulasi gambar. <input type="checkbox"/> Mengolah data tentang efek manipulasi gambar. <input type="checkbox"/> Mengomunikasikan tentang efek manipulasi gambar. <input type="checkbox"/> gambar. | Keterampilan : <ul style="list-style-type: none"> • Penilaian unjuk kerja • Observasi |

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|---|--|--|---------------------------|--|--|
| 3. Menerapkan pembuatan desain berbasis gambar vektor 4. Membuat desain berbasis gambar vektor | 3.8. Menguraikan desain gambar berbasis vektor. 3.8. Mengintegrasikan desain gambar berbasis vektor. 4.8. Mensketsa desain gambar. 2 Menunjukkan desain gambar berbasis vektor. | <ul style="list-style-type: none"> Pembuatan gambar berbasis vektor. Mengedit gambar berbasis vektor. | | <ul style="list-style-type: none"> Mengamati untuk mengidentifikasi dan merumuskan masalah tentang desain gambar berbasis vektor. Mengumpulkan data tentang desain gambar berbasis vektor. Mengolah data tentang desain gambar berbasis vektor. Mengomunikasikan tentang desain gambar berbasis vektor. | Pengetahuan : <ul style="list-style-type: none"> Tes tertulis Keterampilan : <ul style="list-style-type: none"> Penilaian unjuk kerja Observasi |
| 3.9 Menerapkan perangkat lunak pengolah gambar bitmap (raster) 4.9 Menggunakan perangkat lunak pengolah gambar bitmap (raster) | 3.9. Menjelaskan fungsi fitur-fitur pengolah gambar bitmap. 3.9. Membandingkan gambar berdasarkan fitur. 4.9. Mengintegrasikan fitur dalam menolah gambar vector. 2 Menunjukkan gambar vector hasil pengolahan. | <ul style="list-style-type: none"> Perangkat lunak pengolah gambar. Mengolah gambar bitmap dengan perangkat lunak. | | <ul style="list-style-type: none"> Mengamati untuk mengidentifikasi dan merumuskan masalah tentang pengolah gambar bitmap. Mengumpulkan data tentang perangkat lunak pengolah gambar bitmap. Mengolah data tentang perangkat lunak pengolah gambar bitmap. Mengomunikasikan tentang perangkat lunak pengolah gambar bitmap. | Pengetahuan : <input type="checkbox"/> Tes tertulis Keterampilan : <ul style="list-style-type: none"> Penilaian unjuk kerja Observasi |
| Kompetensi Dasar | Indikator Pencapaian Kompetensi | Materi Pokok | Alokasi Waktu (JP) | Kegiatan Pembelajaran | Penilaian |

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| <p>3.10 Menerapkan manipulasi gambar raster dengan menggunakan fitur efek</p> <p>4.10 Memanipulasi gambar raster dengan menggunakan fitur efek</p> | <p>3.10.1 Menjelaskan fungsi manipulasi gambar bitmap.</p> <p>3.10.2 Mengintegrasikan efek fitur manipulasi pada gambar.</p> <p>4.10.1 Membandingkan efek manipulasi pada gambar.</p> <p>4.10.2 Menunjukkan gambar hasil manipulasi.</p> | <ul style="list-style-type: none"> • Manfaat manipulasi gambar bitmap. • Teknik memanipulasi gambar bitmap. | | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan merumuskan masalah □ tentang manipulasi gambar. Mengumpulkan data tentang efek manipulasi gambar. Mengolah data tentang efek manipulasi gambar. Mengomunikasikan tentang efek manipulasi gambar. | <p>Pengetahuan :</p> <ul style="list-style-type: none"> • Tes tertulis <p>Keterampilan :</p> <ul style="list-style-type: none"> • Penilaian unjuk kerja • Observasi |
| <p>3.11 Menerapkan desain berbasis gambar bitmap (raster)</p> <p>4.11 Membuat desain berbasis gambar bitmap (raster)</p> | <p>3.11.1 Menguraikan desain gambar berbasis bitmap.</p> <p>3.11.2 Mengintegrasikan desain gambar berbasis bitmap.</p> <p>4.11.1 Mensketsa desain gambar.</p> <p>4.11.2 Menunjukkan desain gambar berbasis bitmap.</p> | <ul style="list-style-type: none"> • Pembuatan gambar berbasis bitmap. • Mengedit gambar berbasis bitmap. | | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan merumuskan masalah □ tentang desain gambar. Mengumpulkan data tentang desain gambar berbasis bitmap. Mengolah data tentang desain gambar berbasis bitmap. Mengomunikasikan tentang desain gambar berbasis bitmap. | <p>Pengetahuan :</p> <ul style="list-style-type: none"> • Tes tertulis <p>Keterampilan :</p> <ul style="list-style-type: none"> • Penilaian unjuk kerja • Observasi |

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| 3.12 Mengevaluasi penggabungan gambar vektor dan bitmap (raster) | 3.17.1 Menguraikan karakteristik penggabungan gambar vektor dan bitmap | <ul style="list-style-type: none"> Karakteristik penggabungan gambar vektor dan bitmap Kriteria penilaian penggabungan gambar vektor dan bitmap Menyusun laporan penilaian. | | <ul style="list-style-type: none"> Mengamati untuk mengidentifikasi dan merumuskan masalah tentang penilaian gambar. Mengumpulkan data tentang penilaian gabungan gambar vektor dan bitmap. Mengolah data tentang penilaian gabungan gambar vektor dan bitmap. Mengomunikasikan tentang penilaian gabungan gambar vektor dan bitmap. | Pengetahuan : <input type="checkbox"/> Tes tertulis Keterampilan : <ul style="list-style-type: none"> Penilaian unjuk kerja Observasi |
| 4.12 Membuat desain penggabungan gambar vektor dan bitmap (raster) | 3.17.2 Menyusun kriteria penilaian 4.17.1 Melakukan penilaian terhadap penggabungan gambar vektor dan bitmap 4.17.2 Menyusun laporan penilaian | | | | |

Semester genap

| Kompetensi Dasar | Indikator Pencapaian Kompetensi | Materi Pokok | Alokasi Waktu (JP) | Kegiatan Pembelajaran | Penilaian |
|---|--|---|--------------------|---|---|
| 3.7 Menerapkan 4.7 manipulasi gambar vektor dengan menggunakan fitur efek Memanipulasi gambar vektor dengan menggunakan | 3.7.1 Menjelaskan fungsi 3.7.2 manipulasi gambar vektor. 4.7.1 4.7.2 Mengintegrasikan efek fitur manipulasi pada gambar. Membandingkan efek manipulasi pada gambar. Menunjukkan | <ul style="list-style-type: none"> Manfaat manipulasi gambar vektor. Teknik memanipulasi gambar vektor. | 10 JP | <ul style="list-style-type: none"> Mengamati untuk mengidentifikasi dan <input type="checkbox"/> merumuskan masalah tentang manipulasi gambar. Mengumpulkan data tentang efek manipulasi gambar. Mengolah data tentang efek manipulasi gambar. | Pengetahuan : • Tes tertulis Keterampilan : • Penilaian unjuk kerja • Observasi |



| fitur efek | gambar hasil manipulasi. | | | Mengomunikasikan tentang efek manipulasi gambar. | |
|--|---|---|-------|--|---|
| 3.8 Menerapkan 4.8 pembuatan desain berbasis gambar vektor Membuat desain berbasis gambar vektor | 3.8.1 Menguraikan desain 3.8.2 gambar berbasis vektor. 4.8.1 4.8.2 Mengintegrasikan desain gambar berbasis vektor. Mensketsa desain gambar. Menunjukkan desain gambar berbasis vektor. | <ul style="list-style-type: none"> • Pembuatan gambar berbasis vektor. • Mengedit gambar berbasis vektor. | 10 JP | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan <input type="checkbox"/> merumuskan masalah tentang desaingambar. Mengumpulkan data tentang desain gambar berbasis vektor. Mengolah data tentang desain gambar berbasis vektor. Mengomunikasikan tentang desain gambar berbasis vektor. | Pengetahuan : <ul style="list-style-type: none"> • Tes tertulis Keterampilan : <ul style="list-style-type: none"> • Penilaian unjuk kerja • Obervasi |


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|--|---|--|---------------------------|--|--|
| 3.9 Menerapkan perangkat lunak pengolah gambar bitmap (raster) | 3.9.1 Menjelaskan fungsi 3.9.2 fitur-fitur pengolah 4.9.1 gambar bitmap. 4.9.2 Membandingkan gambar berdasarkan fitur. Mengintegrasikan fitur dalam menolah gambar vector. Menunjukkan gambar vector hasil pengolahan. | <ul style="list-style-type: none"> • Perangkat lunak pengolah gambar. • Mengolah gambar bitmap dengan perangkat lunak. | 10 JP | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan merumuskan masalah tentang pengolah gambar bitmap. • Mengumpulkan data tentang perangkat lunak pengolah gambar bitmap. • Mengomunikasikan tentang perangkat lunak pengolah gambar bitmap. | Pengetahuan : <input type="checkbox"/> Tes tertulis Keterampilan : <ul style="list-style-type: none"> • Penilaian unjuk kerja • Observasi |
| Kompetensi Dasar | Indikator Pencapaian Kompetensi | Materi Pokok | Alokasi Waktu (JP) | Kegiatan Pembelajaran | Penilaian |

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|--|--|--------------------------------------|-------|---|---|
| 3.10 Menerapkan manipulasi gambar raster dengan menggunakan fitur efek | 3.10.1 Menjelaskan fungsi manipulasi gambar bitmap. | • Manfaat manipulasi gambar bitmap. | 10 JP | • Mengamati untuk mengidentifikasi dan <input type="checkbox"/> merumuskan masalah tentang manipulasi gambar. Mengumpulkan data tentang efek manipulasi gambar. Mengolah data tentang efek manipulasi gambar. Mengomunikasikan tentang efek manipulasi gambar. | Pengetahuan : • Tes tertulis Keterampilan : • Penilaian unjuk kerja • Observasi |
| 4.10 Memanipulasi gambar raster dengan menggunakan fitur efek | 3.10.2 Mengintegrasikan efek fitur manipulasi pada gambar. 4.10.1 Membandingkan efek manipulasi pada gambar. 4.10.2 Menunjukkan gambar hasil manipulasi. | • Teknik memanipulasi gambar bitmap. | | | |
| 3.11 Menerapkan desain berbasis gambar bitmap (raster) | 3.11.1 Menguraikan desain gambar berbasis bitmap. | • Pembuatan gambar berbasis bitmap. | 10 JP | • Mengamati untuk mengidentifikasi dan <input type="checkbox"/> merumuskan masalah tentang desain gambar. Mengumpulkan data tentang desain gambar berbasis bitmap. Mengolah data tentang desain gambar berbasis bitmap. Mengomunikasikan tentang desain gambar berbasis bitmap. | Pengetahuan : <input type="checkbox"/> Tes tertulis Keterampilan : • Penilaian unjuk kerja • Observasi |
| 4.11 Membuat desain berbasis gambar bitmap (raster) | 3.11.2 Mengintegrasikan desain gambar berbasis bitmap. 4.11.1 Mensketsa desain gambar. 4.11.2 Menunjukkan desain gambar berbasis bitmap. | • Mengedit gambar berbasis bitmap. | | | |

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| 3.12 Mengevaluasi penggabungan gambar vektor dan bitmap (raster) | 3.12.1 Menguraikan karakteristik penggabungan gambar vektor dan bitmap | <ul style="list-style-type: none"> • Karakteristik penggabungan gambar vektor dan bitmap • Kriteria penilaian penggabungan gambar vektor dan bitmap • Menyusun laporan penilaian. | 10 JP | <ul style="list-style-type: none"> • Mengamati untuk mengidentifikasi dan merumuskan masalah tentang penilaian gambar. • Mengumpulkan data tentang penilaian gabungan gambar vektor dan bitmap. • Mengolah data tentang penilaian gabungan gambar vektor dan bitmap. • Mengomunikasikan tentang penilaian gabungan gambar vektor dan bitmap. | Pengetahuan : <input type="checkbox"/> Tes tertulis Keterampilan : <ul style="list-style-type: none"> • Penilaian unjuk kerja • Observasi |
| 4.12 Membuat desain penggabungan gambar vektor dan bitmap (raster) | 3.12.2 Menyusun kriteria penilaian 4.12.1 Melakukan penilaian terhadap penggabungan gambar vektor dan bitmap 4.12.2 Menyusun laporan penilaian | | | | |

Lampiran 5. Lembar Jawaban Peserta Didik UAS Dasar Desain Grafis

|  SMK MUHAMMADIYAH 1 BANTUL | | LEMBAR JAWAB KOMPUTER PENILAIAN AKHIR TAHUN (PAT) TAHUN PELAJARAN 2017/2018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>• Bulatan kolom Nama Peserta dan Nomor WAJIB DIISI LENGKAP! • Bulatan kolom Kelas, Prog. Keahlian dan Mata Pelajaran WAJIB DIISI! • JANGAN menghitamkan bulatan melebihi lingkaran!</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Keahlian <table border="1"> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> </table> | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mata Pelajaran <table border="1"> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> </table> | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Hari <table border="1"> <tr><td>Sabtu</td></tr> </table> | Sabtu |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Tgl/Bln/Thn <table border="1"> <tr><td>2</td><td>6</td><td>1</td></tr> <tr><td>1</td><td>8</td><td></td></tr> </table> | | 2 | 6 | 1 | 1 | 8 | | Tanda Tangan  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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<tr><td>13</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>28</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>43</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>58</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>14</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>29</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>44</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>59</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> <tr><td>15</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>30</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>45</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>60</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr> </table> | | | | 1 | A | B | C | D | E | 16 | A | B | C | D | E | 31 | A | B | C | D | E | 46 | A | B | C | D | E | 2 | A | B | C | D | E | 17 | A | B | C | D | E | 32 | A | B | C | D | E | 47 | A | B | C | D | E | 3 | A | B | C | D | E | 18 | A | B | C | D | E | 33 | A | B | C | D | E | 48 | A | B | C | D | E | 4 | A | B | C | D | E | 19 | A | B | C | D | E | 34 | A | B | C | D | E | 49 | A | B | C | D | E | 5 | A | B | C | D | E | 20 | A | B | C | D | E | 35 | A | B | C | D | E | 50 | A | B | C | D | E | 6 | A | B | C | D | E | 21 | A | B | C | D | E | 36 | A | B | C | D | E | 51 | A | B | C | D | E | 7 | A | B | C | D | E | 22 | A | B | C | D | E | 37 | A | B | C | D | E | 52 | A | B | C | D | E | 8 | A | B | C | D | E | 23 | A | B | C | D | E | 38 | A | B | C | D | E | 53 | A | B | C | D | E | 9 | A | B | C | D | E | 24 | A | B | C | D | E | 39 | A | B | C | D | E | 54 | A | B | C | D | E | 10 | A | B | C | D | E | 25 | A | B | C | D | E | 40 | A | B | C | D | E | 55 | A | B | C | D | E | 11 | A | B | C | D | E | 26 | A | B | C | D | E | 41 | A | B | C | D | E | 56 | A | B | C | D | E | 12 | A | B | C | D | E | 27 | A | B | C | D | E | 42 | A | B | C | D | E | 57 | A | B | C | D | E | 13 | A | B | C | D | E | 28 | A | B | C | D | E | 43 | A | B | C | D | E | 58 | A | B | C | D | E | 14 | A | B | C | D | E | 29 | A | B | C | D | E | 44 | A | B | C | D | E | 59 | A | B | C | D | E | 15 | A | B | C | D | E | 30 | A | B | C | D | E | 45 | A | B | C | D | E | 60 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 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| 1 | A | B | C | D | E | 16 | A | B | C | D | E | 31 | A | B | C | D | E | 46 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | A | B | C | D | E | 17 | A | B | C | D | E | 32 | A | B | C | D | E | 47 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | A | B | C | D | E | 18 | A | B | C | D | E | 33 | A | B | C | D | E | 48 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | A | B | C | D | E | 19 | A | B | C | D | E | 34 | A | B | C | D | E | 49 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | A | B | C | D | E | 20 | A | B | C | D | E | 35 | A | B | C | D | E | 50 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | A | B | C | D | E | 21 | A | B | C | D | E | 36 | A | B | C | D | E | 51 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | A | B | C | D | E | 22 | A | B | C | D | E | 37 | A | B | C | D | E | 52 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | A | B | C | D | E | 23 | A | B | C | D | E | 38 | A | B | C | D | E | 53 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | A | B | C | D | E | 24 | A | B | C | D | E | 39 | A | B | C | D | E | 54 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | A | B | C | D | E | 25 | A | B | C | D | E | 40 | A | B | C | D | E | 55 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | A | B | C | D | E | 26 | A | B | C | D | E | 41 | A | B | C | D | E | 56 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | A | B | C | D | E | 27 | A | B | C | D | E | 42 | A | B | C | D | E | 57 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | A | B | C | D | E | 28 | A | B | C | D | E | 43 | A | B | C | D | E | 58 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | A | B | C | D | E | 29 | A | B | C | D | E | 44 | A | B | C | D | E | 59 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | A | B | C | D | E | 30 | A | B | C | D | E | 45 | A | B | C | D | E | 60 | A | B | C | D | E | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

|  SMK MUHAMMADIYAH 1 BANTUL | | LEMBAR JAWAB KOMPUTER PENILAIAN AKHIR TAHUN (PAT) TAHUN PELAJARAN 2017/2018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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A | A | A | A | A | A | A | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | J | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | O | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | Q | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | T | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | W | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Z | Nomor <table border="1"> <tr><td>0</td><td>1</td><td>2</td></tr> <tr><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td><td>6</td></tr> 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Keahlian <table border="1"> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td></tr> </table> | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Mata Pelajaran <table border="1"> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>○</td><td>○</td><td>○</td><td>○</td></tr> </table> | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Hari <table border="1"> <tr><td>Sabtu</td></tr> </table> | Sabtu |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| ○ | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ○ | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ○ | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sabtu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Lampiran 6. Kunci Jawaban Soal Ujian
Kunci Jawaban Soal Pilihan Ganda Mata Pelajaran Dasar Desain Grafis

| | | | | | | | |
|----|---|----|---|----|-------|----|---|
| 1 | d | 11 | b | 21 | e | 31 | a |
| 2 | e | 12 | d | 22 | b | 32 | b |
| 3 | c | 13 | c | 23 | c | 33 | d |
| 4 | a | 14 | b | 24 | a | 34 | a |
| 5 | b | 15 | a | 25 | d | 35 | b |
| 6 | b | 16 | e | 26 | b | 36 | d |
| 7 | a | 17 | c | 27 | c | 37 | e |
| 8 | b | 18 | b | 28 | bonus | 38 | b |
| 9 | a | 19 | c | 29 | d | 39 | e |
| 10 | d | 20 | a | 30 | d | 40 | e |

Lampiran 7. Nilai Siswa Berdasarkan Soal Pilihan Ganda

| No | Nama Subjek | Benar | Salah | Blank | Total | Score | Grade | Nilai UAS |
|----|----------------------------|-------|-------|-------|-------|-------|-------|-----------|
| 1 | ABI SUKOCO | 27 | 13 | 0 | 27 | 67,5 | C | 80 |
| 2 | APRI AJI PRASETYO | 30 | 10 | 0 | 30 | 75 | B | 75 |
| 3 | ARIFIN BUDI SUSANTO | 29 | 11 | 0 | 29 | 72,5 | B | 85 |
| 4 | ASSHOLLA DWI ARTIANA | 24 | 16 | 0 | 24 | 60 | C | 80 |
| 5 | AYU PRASWATI | 23 | 17 | 0 | 23 | 57,5 | D | 85 |
| 6 | BELLA MEGA SELVIA | 21 | 19 | 0 | 21 | 52,5 | D | 75 |
| 7 | DIAH RAHMAWATI | 21 | 19 | 0 | 21 | 52,5 | D | 75 |
| 8 | DIAN MUSHOLAWATI | 24 | 16 | 0 | 24 | 60 | C | 90 |
| 9 | ERFAN ARDIYANTO | 24 | 16 | 0 | 24 | 60 | C | 90 |
| 10 | FERI ARIYANTO | 23 | 17 | 0 | 23 | 57,5 | D | 75 |
| 11 | FIKO EFRILENIO PAMUNGgaran | 29 | 11 | 0 | 29 | 72,5 | B | 80 |
| 12 | INDAH LESTARI | 21 | 19 | 0 | 21 | 52,5 | D | 80 |
| 13 | IQBAL AS'ADIL UMAM | 21 | 19 | 0 | 21 | 52,5 | D | 75 |
| 14 | MEILANI KURNIAWATI | 21 | 19 | 0 | 21 | 52,5 | D | 75 |
| 15 | MUH. HERNANDA | 18 | 22 | 0 | 18 | 45 | E | 95 |
| 16 | NENG AYANG MARETTA | 21 | 19 | 0 | 21 | 52,5 | D | 80 |
| 17 | NOVIA KHOLIFAH | 21 | 19 | 0 | 21 | 52,5 | D | 90 |
| 18 | PIPIN NURMALIKA | 23 | 17 | 0 | 23 | 57,5 | D | 85 |
| 19 | RIZKADILLA SEPTRIYAN.A | 25 | 15 | 0 | 25 | 62,5 | C | 80 |
| 20 | WINING SARI | 22 | 18 | 0 | 22 | 55 | D | 80 |
| 21 | WIWIK WIDYASTUTI | 25 | 15 | 0 | 25 | 62,5 | C | 80 |
| 22 | YULI SULASIH | 26 | 14 | 0 | 26 | 65 | C | 80 |
| 23 | PRADIPTA BAGAS KURNIAWAN | 26 | 13 | 1 | 26 | 65 | C | 90 |
| 24 | AGUNG SANTOSO | 22 | 18 | 0 | 22 | 55 | D | 85 |
| 25 | ANNISA EKA SAFITRI | 25 | 14 | 1 | 25 | 62,5 | C | 90 |
| 26 | DINO AFRIAN LUTFIYANTO | 29 | 11 | 0 | 29 | 72,5 | B | 90 |
| 27 | FERI HIDAYAT | 29 | 11 | 0 | 29 | 72,5 | B | 75 |
| 28 | IDA NUR ADVAYANTI | 29 | 10 | 1 | 29 | 72,5 | B | 90 |
| 29 | IKMAL SYAHRUL SAPUTRA | 31 | 9 | 0 | 31 | 77,5 | B | 75 |
| 30 | MEILANA DWI WIDYARINI | 25 | 13 | 2 | 25 | 62,5 | C | 85 |
| 31 | MUHAMMAD GUNTUR DWI.M | 27 | 13 | 0 | 27 | 67,5 | C | 75 |
| 32 | NURINDRA ANDRYANI | 25 | 15 | 0 | 25 | 62,5 | C | 80 |
| 33 | PUTRA PERTAMA | 29 | 11 | 0 | 29 | 72,5 | B | 80 |
| 34 | RENDRA AYU NUR SAFITRI | 18 | 22 | 0 | 18 | 45 | E | 75 |
| 35 | RESTU ADITYA NUGRAHA | 30 | 10 | 0 | 30 | 75 | B | 90 |
| 36 | RIDWAN TRI PAMUNGKAS | 30 | 10 | 0 | 30 | 75 | B | 90 |
| 37 | RISA TRI YULIANA | 29 | 11 | 0 | 29 | 72,5 | B | 90 |
| 38 | TRI AZMI YUSUF | 29 | 11 | 0 | 29 | 72,5 | B | 80 |
| 39 | WAHYU WINANTOYELA.A.W | 29 | 11 | 0 | 29 | 72,5 | B | 90 |
| 40 | YELA AYU W | 15 | 25 | 0 | 15 | 37,5 | E | 80 |
| | Rata - Rata | 24,9 | 14,97 | 0 | 24,9 | 62,25 | | 82,5 |

Lampiran 8. Hasil Analisis Validitas Butir Soal

| No. Soal | Korelasi | Signifikansi | Keterangan Arikunto (2016:89) |
|----------|----------|-------------------|----------------------------------|
| 1 | 0,343 | Signifikan | Valid |
| 2 | 0,359 | Signifikan | Valid |
| 3 | 0,366 | Signifikan | Valid |
| 4 | 0,16 | - | Tidak Valid |
| 5 | 0,41 | Sangat Signifikan | Valid |
| 6 | -0,076 | - | Tidak Valid |
| 7 | -0,109 | - | Tidak Valid |
| 8 | 0,707 | Sangat Signifikan | Valid |
| 9 | 0,329 | Signifikan | Valid |
| 10 | 0,19 | - | Tidak Valid |
| 11 | 0,331 | Signifikan | Valid |
| 12 | 0,291 | - | Tidak Valid |
| 13 | 0,298 | - | Tidak Valid |
| 14 | 0,555 | Sangat Signifikan | Valid |
| 15 | -0,139 | - | Tidak Valid |
| 16 | 0,708 | Sangat Signifikan | Valid |
| 17 | -0,045 | - | Tidak Valid |
| 18 | 0,505 | Sangat Signifikan | Valid |
| 19 | 0,82 | Sangat Signifikan | Valid |
| 20 | 0,398 | Sangat Signifikan | Valid |
| 21 | 0,463 | Sangat Signifikan | Valid |
| 22 | -0,053 | - | Tidak Valid |
| 23 | 0,372 | Sangat Signifikan | Valid |
| 24 | -0,297 | - | Tidak Valid |
| 25 | 0,104 | - | Tidak Valid |
| 26 | 0,549 | Sangat Signifikan | Valid |
| 27 | 0,223 | - | Tidak Valid |
| 28 | 0 | NAN | Tidak Valid |
| 29 | 0,436 | Sangat Signifikan | Valid |
| 30 | 0,382 | Signifikan | Valid |
| 31 | 0,049 | - | Tidak Valid |
| 32 | 0,069 | - | Tidak Valid |
| 33 | 0,484 | Sangat Signifikan | Valid |
| 34 | 0,283 | - | Tidak Valid |
| 35 | 0,28 | - | Tidak Valid |
| 36 | -0,245 | - | Tidak Valid |
| 37 | 0,406 | Sangat Signifikan | Valid |
| 38 | -0,593 | - | Tidak Valid |
| 39 | -0,094 | - | Tidak Valid |
| 40 | 0,333 | Signifikan | Valid |

Pada taraf signifikansi 5%, $r_{\text{tabel}} = 0,312$.

Lampiran 9. Hasil Analisis Reliabilitas Butir Soal

Rata2 = 24,90
 Simpang Baku = 3,95
 KorelasiXY = 0,37
 Reliabilitas Tes = 0,54

| No | Nama Subjek | Skor Ganjil | Skor Genap | Skor total |
|----|----------------------------|-------------|------------|------------|
| 1 | ABI SUKOCO | 12 | 15 | 27 |
| 2 | APRI AJI PRASETYO | 14 | 16 | 30 |
| 3 | ARIFIN BUDI SUSANTO | 13 | 16 | 29 |
| 4 | ASSHOLLA DWI ARTIANA | 13 | 13 | 24 |
| 5 | AYU PRASWATI | 11 | 14 | 23 |
| 6 | BELLA MEGA SELVIA | 11 | 10 | 21 |
| 7 | DIAH RAHMAWATI | 11 | 10 | 21 |
| 8 | DIAN MUSHOLAWATI | 9 | 15 | 24 |
| 9 | ERFAN ARDIYANTO | 9 | 15 | 24 |
| 10 | FERI ARIYANTO | 8 | 15 | 23 |
| 11 | FIKO EFRILENIO PAMUNGgaran | 14 | 15 | 29 |
| 12 | INDAH LESTARI | 8 | 13 | 21 |
| 13 | IQBAL AS'ADIL UMAM | 11 | 10 | 21 |
| 14 | MEILANI KURNIAWATI | 11 | 10 | 21 |
| 15 | MUH. HERNANDA | 8 | 10 | 18 |
| 16 | NENG AYANG MARETTA | 8 | 13 | 21 |
| 17 | NOVIA KHOLIFAH | 8 | 13 | 21 |
| 18 | PIPIN NURMALIKA | 9 | 14 | 23 |
| 19 | RIZKADILLA SEPTRIYAN.A | 10 | 15 | 25 |
| 20 | WINING SARI | 11 | 11 | 22 |
| 21 | WIWIK WIDYASTUTI | 13 | 12 | 25 |
| 22 | YULI SULASIH | 13 | 13 | 26 |
| 23 | PRADIPTA BAGAS KURNIAWAN | 12 | 14 | 26 |
| 24 | AGUNG SANTOSO | 11 | 11 | 22 |
| 25 | ANNISA EKA SAFITRI | 12 | 13 | 25 |
| 26 | DINO AFRIAN LUTFIYANTO | 16 | 13 | 29 |
| 27 | FERI HIDAYAT | 15 | 14 | 29 |
| 28 | IDA NUR ADVAYANTI | 15 | 14 | 29 |
| 29 | IKMAL SYAHRUL SAPUTRA | 16 | 15 | 31 |
| 30 | MEILANA DWI WIDYARINI | 12 | 13 | 25 |
| 31 | MUHAMMAD GUNTUR DWI.M | 14 | 13 | 27 |
| 32 | NURINDRA ANDRYANI | 12 | 13 | 25 |
| 33 | PUTRA PERTAMA | 14 | 15 | 29 |
| 34 | RENDRA AYU NUR SAFITRI | 8 | 11 | 18 |
| 35 | RESTU ADITYA NUGRAHA | 15 | 15 | 30 |
| 36 | RIDWAN TRI PAMUNGKAS | 16 | 14 | 30 |
| 37 | RISA TRI YULIANA | 15 | 14 | 29 |
| 38 | TRI AZMI YUSUF | 15 | 14 | 29 |
| 39 | WAHYU WINANTOYELA.A.W | 16 | 13 | 29 |
| 40 | YELA AYU W | 8 | 7 | 15 |

Lampiran 10. Hasil Analisis Daya Pembeda Butir Soal

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Keterangan Arikunto, (2016:232) |
|----------|-----------|------------|------|---------------|------------------------------------|
| 1 | 11 | 6 | 5 | 45,45 | Baik |
| 2 | 11 | 6 | 5 | 45,45 | Baik |
| 3 | 10 | 6 | 4 | 36,36 | Cukup |
| 4 | 11 | 10 | 1 | 9,09 | Jelek |
| 5 | 8 | 3 | 5 | 45,45 | Baik |
| 6 | 5 | 7 | -2 | -18,18 | Sangat Jelek |
| 7 | 3 | 5 | -2 | -18,18 | Sangat Jelek |
| 8 | 10 | 1 | 9 | 81,82 | Baik Sekali |
| 9 | 11 | 7 | 4 | 36,36 | Cukup |
| 10 | 4 | 1 | 3 | 27,27 | Cukup |
| 11 | 10 | 6 | 4 | 36,36 | Cukup |
| 12 | 11 | 6 | 5 | 45,45 | Baik |
| 13 | 7 | 4 | 3 | 27,27 | Cukup |
| 14 | 10 | 4 | 6 | 54,55 | Baik |
| 15 | 5 | 8 | -3 | -27,27 | Sangat Jelek |
| 16 | 11 | 2 | 9 | 81,82 | Baik Sekali |
| 17 | 11 | 11 | 0 | 0 | Jelek |
| 18 | 11 | 8 | 3 | 27,27 | Cukup |
| 19 | 11 | 0 | 11 | 100 | Baik Sekali |
| 20 | 11 | 8 | 3 | 27,27 | Cukup |
| 21 | 8 | 2 | 6 | 54,55 | Baik |
| 22 | 1 | 1 | 0 | 0 | Jelek |
| 23 | 10 | 5 | 5 | 45,45 | Baik |
| 24 | 2 | 7 | -5 | -45,45 | Sangat Jelek |
| 25 | 4 | 4 | 0 | 0 | Jelek |
| 26 | 11 | 3 | 8 | 72,73 | Baik Sekali |
| 27 | 10 | 9 | 1 | 9,09 | Jelek |
| 28 | 11 | 11 | 0 | 0 | Jelek |
| 29 | 11 | 6 | 5 | 45,45 | Baik |
| 30 | 11 | 9 | 2 | 18,18 | Jelek |
| 31 | 4 | 3 | 1 | 9,09 | Jelek |
| 32 | 7 | 5 | 2 | 18,18 | Jelek |
| 33 | 11 | 4 | 7 | 63,64 | Baik |
| 34 | 11 | 10 | 1 | 9,09 | Jelek |
| 35 | 8 | 6 | 2 | 18,18 | Jelek |
| 36 | 3 | 7 | -4 | -36,36 | Sangat Jelek |
| 37 | 9 | 5 | 4 | 36,36 | Cukup |
| 38 | 3 | 11 | -8 | -72,73 | Sangat Jelek |
| 39 | 1 | 2 | -1 | -9,09 | Sangat Jelek |
| 40 | 6 | 1 | 5 | 45,45 | Baik |

Lampiran 11. Hasil Analisis Tingkat Kesukaran Butir Soal

| No. Soal | Jml Benar | Tingkat Kesukaran (%) | Tafsir | Keterangan Farida, (2017:156) |
|----------|-----------|-----------------------|--------------|----------------------------------|
| 1 | 33 | 82,5 | Mudah | Mudah |
| 2 | 35 | 87,5 | Sangat Mudah | Mudah |
| 3 | 27 | 67,5 | Sedang | Sedang |
| 4 | 39 | 97,5 | Sangat Mudah | Mudah |
| 5 | 18 | 45 | Sedang | Sedang |
| 6 | 21 | 52,5 | Sedang | Sedang |
| 7 | 9 | 22,5 | Sukar | Sukar |
| 8 | 26 | 65 | Sedang | Sedang |
| 9 | 29 | 72,5 | Mudah | Mudah |
| 10 | 6 | 15 | Sangat Sukar | Sukar |
| 11 | 26 | 65 | Sedang | Sedang |
| 12 | 28 | 70 | Sedang | Mudah |
| 13 | 15 | 37,5 | Sedang | Sedang |
| 14 | 31 | 77,5 | Mudah | Mudah |
| 15 | 25 | 62,5 | Sedang | Sedang |
| 16 | 31 | 77,5 | Mudah | Mudah |
| 17 | 39 | 97,5 | Sangat Mudah | Mudah |
| 18 | 36 | 90 | Sangat Mudah | Mudah |
| 19 | 16 | 40 | Sedang | Sedang |
| 20 | 35 | 87,5 | Sangat Mudah | Mudah |
| 21 | 17 | 42,5 | Sedang | Sedang |
| 22 | 2 | 5 | Sangat Sukar | Sukar |
| 23 | 32 | 80 | Mudah | Mudah |
| 24 | 13 | 32,5 | Sedang | Sedang |
| 25 | 10 | 25 | Sukar | Sukar |
| 26 | 23 | 57,5 | Sedang | Sedang |
| 27 | 35 | 87,5 | Sangat Mudah | Mudah |
| 28 | 40 | 100 | Sangat Mudah | Mudah |
| 29 | 35 | 87,5 | Sangat Mudah | Mudah |
| 30 | 37 | 92,5 | Sangat Mudah | Mudah |
| 31 | 18 | 45 | Sedang | Sedang |
| 32 | 23 | 57,5 | Sedang | Sedang |
| 33 | 32 | 80 | Mudah | Mudah |
| 34 | 39 | 97,5 | Sangat Mudah | Mudah |
| 35 | 24 | 60 | Sedang | Sedang |
| 36 | 19 | 47,5 | Sedang | Sedang |
| 37 | 23 | 57,5 | Sedang | Sedang |
| 38 | 23 | 57,5 | Sedang | Sedang |
| 39 | 9 | 22,5 | Sukar | Sukar |
| 40 | 17 | 42,5 | Sedang | Sedang |

Lampiran 12. Hasil Analisis Efektivitas Pengecoh Butir Soal

| No. Soal | a | b | c | d | e |
|----------|-------|-------|-------|-------|-------|
| 1 | 0-- | 4--- | 3- | 33** | 0-- |
| 2 | 4--- | 1++ | 0-- | 0-- | 35** |
| 3 | 0-- | 0-- | 27** | 13--- | 0-- |
| 4 | 39** | 1--- | 0-- | 0-- | 0-- |
| 5 | 14--- | 18** | 0-- | 7+ | 1-- |
| 6 | 1-- | 21** | 1-- | 16--- | 1-- |
| 7 | 9** | 0-- | 28--- | 3- | 0-- |
| 8 | 1- | 26** | 9--- | 2+ | 2+ |
| 9 | 29** | 5-- | 1- | 5-- | 0-- |
| 10 | 8++ | 2-- | 15-- | 6** | 9++ |
| 11 | 3++ | 26** | 1- | 2+ | 8--- |
| 12 | 6-- | 0-- | 0-- | 28** | 6-- |
| 13 | 16--- | 4+ | 15** | 3- | 2- |
| 14 | 5--- | 31** | 2++ | 1- | 1- |
| 15 | 25** | 11--- | 2+ | 2+ | 0-- |
| 16 | 3+ | 2++ | 0-- | 4-- | 31** |
| 17 | 0-- | 0-- | 39** | 1--- | 0-- |
| 18 | 3--- | 36** | 0-- | 0-- | 1++ |
| 19 | 5++ | 16--- | 16** | 1-- | 0-- |
| 20 | 35** | 1++ | 2- | 2- | 0-- |
| 21 | 6++ | 2- | 0-- | 15--- | 17** |
| 22 | 14+ | 2** | 3- | 19-- | 1-- |
| 23 | 2++ | 1- | 32** | 1- | 4-- |
| 24 | 13** | 13-- | 3- | 3- | 8++ |
| 25 | 2- | 5+ | 7++ | 10** | 16--- |
| 26 | 0-- | 23** | 0-- | 4++ | 13--- |
| 27 | 1++ | 2- | 35** | 0-- | 1++ |
| 28 | 15+ | 0-- | 24--- | 0-- | 1-- |
| 29 | 5--- | 0--- | 0-- | 35** | 0-- |
| 30 | 1+ | 1+ | 0-- | 37** | 1+ |
| 31 | 18** | 11-- | 10-- | 1-- | 0-- |
| 32 | 8-- | 23** | 8-- | 0-- | 0-- |
| 33 | 0-- | 6--- | 2++ | 32** | 0-- |
| 34 | 39** | 0-- | 0-- | 1--- | 0-- |
| 35 | 12--- | 24** | 2- | 1-- | 1-- |
| 36 | 0-- | 1-- | 3+ | 19** | 17--- |
| 37 | 1-- | 10--- | 5++ | 1-- | 23** |
| 38 | 0-- | 23** | 17--- | 0-- | 0-- |
| 39 | 14-- | 0-- | 10++ | 7++ | 9** |
| 40 | 4+ | 1-- | 5++ | 13--- | 17** |

Keterangan:

** : Kunci Jawaban
 ++ : Sangat Baik
 + : Baik
 - : Kurang Baik
 -- : Buruk
 --- : Sangat Buruk

| No. Soal | Kualitas Pengecoh | | | | | Kategori |
|----------|-------------------|---------------|---------------|---------------|---------------|-------------|
| | a | b | c | d | e | |
| 1 | Buruk | Sangat Buruk | kurang baik | Kunci Jawaban | Buruk | Tidak Baik |
| 2 | Sangat Buruk | Sangat Baik | Buruk | Buruk | Kunci Jawaban | Kurang Baik |
| 3 | Buruk | Buruk | Kunci Jawaban | Sangat Buruk | Buruk | Tidak Baik |
| 4 | Kunci Jawaban | Sangat Buruk | Buruk | Buruk | Buruk | Tidak Baik |
| 5 | Sangat Buruk | Kunci Jawaban | Buruk | Baik | Buruk | Kurang Baik |
| 6 | Buruk | Kunci Jawaban | Buruk | Sangat Buruk | Buruk | Tidak Baik |
| 7 | Kunci Jawaban | Buruk | Sangat Buruk | kurang baik | Buruk | Tidak Baik |
| 8 | kurang baik | Kunci Jawaban | Sangat Buruk | Baik | Baik | Cukup Baik |
| 9 | Kunci Jawaban | Buruk | kurang baik | Buruk | Buruk | Tidak Baik |
| 10 | Sangat Baik | Buruk | Buruk | Kunci Jawaban | Sangat Baik | Cukup Baik |
| 11 | Sangat Baik | Kunci Jawaban | kurang baik | Baik | Sangat Buruk | Cukup Baik |
| 12 | Buruk | Buruk | Buruk | Kunci Jawaban | Buruk | Tidak Baik |
| 13 | Sangat Buruk | Baik | Kunci Jawaban | kurang baik | kurang baik | Kurang Baik |
| 14 | Sangat Buruk | Kunci Jawaban | Sangat Baik | kurang baik | kurang baik | Kurang Baik |
| 15 | Kunci Jawaban | Sangat Buruk | Baik | Baik | Buruk | Cukup Baik |
| 16 | Baik | Sangat Baik | Buruk | Buruk | Kunci Jawaban | Cukup Baik |
| 17 | Buruk | Buruk | Kunci Jawaban | Sangat Buruk | Buruk | Tidak Baik |
| 18 | Sangat Buruk | Kunci Jawaban | Buruk | Buruk | Sangat Baik | Kurang Baik |
| 19 | Sangat Baik | Sangat Buruk | Kunci Jawaban | Buruk | Buruk | Kurang Baik |
| 20 | Kunci Jawaban | Sangat Baik | kurang baik | kurang baik | Buruk | Kurang Baik |
| 21 | Sangat Baik | kurang baik | Buruk | Sangat Buruk | Kunci Jawaban | Kurang Baik |
| 22 | Baik | Kunci Jawaban | kurang baik | Buruk | Buruk | Kurang Baik |
| 23 | Sangat Baik | kurang baik | Kunci Jawaban | kurang baik | Buruk | Kurang Baik |
| 24 | Kunci Jawaban | Buruk | kurang baik | kurang baik | Sangat Baik | Kurang Baik |
| 25 | kurang baik | Baik | Sangat Baik | Kunci Jawaban | Sangat Buruk | Cukup Baik |
| 26 | Buruk | Kunci Jawaban | Buruk | Sangat Baik | Sangat Buruk | Kurang Baik |

| No. Soal | Kualitas Pengecoh | | | | | Kategori |
|-------------|-------------------|---------------|---------------|---------------|---------------|-------------|
| | a | b | c | d | e | |
| 27 | Sangat Baik | kurang baik | Kunci Jawaban | Buruk | Sangat Baik | Cukup Baik |
| 28 | Baik | Buruk | Sangat Buruk | Buruk | Buruk | Kurang Baik |
| 29 | Sangat Buruk | Sangat Buruk | Buruk | Kunci Jawaban | Buruk | Tidak Baik |
| 30 | Baik | Baik | Buruk | Kunci Jawaban | Baik | Baik |
| 31 | Kunci Jawaban | Buruk | Buruk | Buruk | Buruk | Tidak Baik |
| 32 | Buruk | Kunci Jawaban | Buruk | Buruk | Buruk | Tidak Baik |
| 33 | Buruk | Sangat Buruk | Sangat Baik | Kunci Jawaban | Buruk | Kurang Baik |
| 34 | Kunci Jawaban | Buruk | Buruk | Sangat Buruk | Buruk | Tidak Baik |
| 35 | Sangat Buruk | Kunci Jawaban | kurang baik | Buruk | Buruk | Tidak Baik |
| 36 | Buruk | Buruk | Baik | Kunci Jawaban | Sangat Buruk | Kurang Baik |
| 37 | Buruk | Sangat Buruk | Sangat Baik | Buruk | Kunci Jawaban | Kurang Baik |
| 38 | Buruk | Kunci Jawaban | Sangat Buruk | Buruk | Buruk | Tidak Baik |
| 39 | Buruk | Buruk | Sangat Baik | Sangat Baik | Kunci Jawaban | Cukup Baik |
| 40 | Baik | Buruk | Sangat Baik | Sangat Buruk | Kunci Jawaban | Cukup Baik |

Lampiran 13. Distribusi Nilai Hasil Analisis Butir Soal

| No. Soal | Validitas | Tingkat Kesukaran | Daya Pembeda | Efektivitas Pengecoh | Nilai | | | | Jumlah | Keterangan |
|----------|-------------|-------------------|--------------|----------------------|-----------|-----------|--------------|----------------------|--------|-------------------|
| | | | | | Validitas | Kesukaran | Daya Pembeda | Efektivitas Pengecoh | | |
| 1 | Valid | Mudah | Baik | Tidak Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 2 | Valid | Mudah | Baik | Kurang Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 3 | Valid | Sedang | Cukup | Tidak Baik | 1 | 1 | 1 | 0 | 3 | Baik |
| 4 | Tidak Valid | Mudah | Jelek | Tidak Baik | 0 | 0 | 0 | 0 | 0 | Sangat Tidak Baik |
| 5 | Valid | Sedang | Baik | Kurang Baik | 1 | 1 | 1 | 0 | 3 | Baik |
| 6 | Tidak Valid | Sedang | Sangat Jelek | Tidak Baik | 0 | 1 | 0 | 0 | 1 | Tidak Baik |
| 7 | Tidak Valid | Sukar | Sangat Jelek | Tidak Baik | 0 | 0 | 0 | 0 | 0 | Sangat Tidak Baik |
| 8 | Valid | Sedang | Baik Sekali | Cukup Baik | 1 | 1 | 1 | 1 | 4 | Sangat Baik |
| 9 | Valid | Mudah | Cukup | Tidak Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 10 | Tidak Valid | Sukar | Cukup | Cukup Baik | 0 | 0 | 1 | 1 | 2 | Cukup |
| 11 | Valid | Sedang | Cukup | Cukup Baik | 1 | 1 | 1 | 1 | 4 | Sangat Baik |
| 12 | Tidak Valid | Mudah | Baik | Tidak Baik | 0 | 0 | 1 | 0 | 1 | Tidak Baik |
| 13 | Tidak Valid | Sedang | Cukup | Kurang Baik | 0 | 1 | 1 | 0 | 2 | Cukup |
| 14 | Valid | Mudah | Baik | Kurang Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 15 | Tidak Valid | Sedang | Sangat Jelek | Cukup Baik | 0 | 1 | 0 | 1 | 2 | Cukup |
| 16 | Valid | Mudah | Baik Sekali | Cukup Baik | 1 | 0 | 1 | 1 | 3 | Baik |
| 17 | Tidak Valid | Mudah | Jelek | Tidak Baik | 0 | 0 | 0 | 0 | 0 | Sangat Tidak Baik |
| 18 | Valid | Mudah | Cukup | Kurang Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 19 | Valid | Sedang | Baik Sekali | Kurang Baik | 1 | 1 | 1 | 0 | 3 | Baik |
| 20 | Valid | Mudah | Cukup | Kurang Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 21 | Valid | Sedang | Baik | Kurang Baik | 1 | 1 | 1 | 0 | 3 | Baik |
| 22 | Tidak Valid | Sukar | Jelek | Kurang Baik | 0 | 0 | 0 | 0 | 0 | Sangat Tidak Baik |
| 23 | Valid | Mudah | Baik | Kurang | 1 | 0 | 1 | 0 | 2 | Cukup |

| No. Soal | Validitas | Tingkat Kesukaran | Daya Pembeda | Efektivitas Pengecoh | Nilai | | | | Jumlah | Keterangan |
|----------|------------------------|-------------------|--------------|----------------------|-----------|-----------|--------------|----------------------|--------|-------------------|
| | | | | | Validitas | Kesukaran | Daya Pembeda | Efektifitas Pengecoh | | |
| | | | | Baik | | | | | | |
| 24 | Tidak Valid | Sedang | Sangat Jelek | Kurang Baik | 0 | 1 | 0 | 0 | 2 | Tidak Baik |
| 25 | Tidak Valid | Sukar | Jelek | Cukup Baik | 0 | 0 | 0 | 1 | 1 | Tidak Baik |
| 26 | Valid | Sedang | Baik Sekali | Kurang Baik | 1 | 1 | 1 | 0 | 3 | Baik |
| 27 | Tidak Valid | Mudah | Jelek | Cukup Baik | 0 | 0 | 0 | 1 | 1 | Tidak Baik |
| 28 | Tidak Valid | Mudah | Jelek | Kurang Baik | 0 | 0 | 0 | 0 | 0 | Sangat Tidak Baik |
| 29 | Valid | Mudah | Baik | Tidak Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 30 | Valid | Mudah | Jelek | Baik | 1 | 0 | 0 | 1 | 2 | Cukup |
| 31 | Tidak Valid | Sedang | Jelek | Tidak Baik | 0 | 1 | 0 | 0 | 1 | Tidak Baik |
| 32 | Tidak Valid | Sedang | Jelek | Tidak Baik | 0 | 1 | 0 | 0 | 1 | Tidak Baik |
| 33 | Valid | Mudah | Baik | Kurang Baik | 1 | 0 | 1 | 0 | 2 | Cukup |
| 34 | Tidak Valid | Mudah | Jelek | Tidak Baik | 0 | 0 | 0 | 0 | 0 | Sangat Tidak Baik |
| 35 | Tidak Valid | Sedang | Jelek | Tidak Baik | 0 | 1 | 0 | 0 | 1 | Tidak Baik |
| 36 | Tidak Valid | Sedang | Sangat Jelek | Kurang Baik | 0 | 1 | 0 | 0 | 1 | Tidak Baik |
| 37 | Valid | Sedang | Cukup | Kurang Baik | 1 | 1 | 1 | 0 | 3 | Baik |
| 38 | Tidak Valid | Sedang | Sangat Jelek | Tidak Baik | 0 | 1 | 0 | 0 | 1 | Tidak Baik |
| 39 | Tidak Valid | Sukar | Sangat Jelek | Cukup Baik | 0 | 0 | 0 | 1 | 1 | Tidak Baik |
| 40 | Valid | Sedang | Baik | Cukup Baik | 1 | 1 | 1 | 1 | 4 | Sangat Baik |
| i | Jumlah angka 1 | | | | 20 | 18 | 22 | 10 | 70 | |
| ii | Persentase jml angka 1 | | | | 28,6% | 25,7% | 31,4% | 14,3% | 100% | |
| iii | Jumlah angka 0 | | | | 20 | 22 | 18 | 30 | 90 | |
| iv | Persentase jml angka 0 | | | | 22% | 24% | 20% | 33% | 100% | |

Lampiran 14. Distribusi Tabel r

| n | Taraf Signifikan | | n | Taraf Signifikan | | n | Taraf Signifikan | |
|----|------------------|-------|----|------------------|-------|------|------------------|-------|
| | 5% | 1% | | 5% | 1% | | 5% | 1% |
| 3 | 0,997 | 0,999 | 27 | 0,381 | 0,487 | 55 | 0,266 | 0,345 |
| 4 | 0,950 | 0,990 | 28 | 0,374 | 0,478 | 60 | 0,254 | 0,330 |
| 5 | 0,878 | 0,959 | 29 | 0,367 | 0,470 | 65 | 0,244 | 0,317 |
| 6 | 0,811 | 0,917 | 30 | 0,361 | 0,463 | 70 | 0,235 | 0,306 |
| 7 | 0,754 | 0,874 | 31 | 0,355 | 0,456 | 75 | 0,227 | 0,296 |
| 8 | 0,707 | 0,834 | 32 | 0,349 | 0,449 | 80 | 0,220 | 0,286 |
| 9 | 0,666 | 0,798 | 33 | 0,344 | 0,442 | 85 | 0,213 | 0,278 |
| 10 | 0,632 | 0,765 | 34 | 0,339 | 0,436 | 90 | 0,207 | 0,270 |
| 11 | 0,602 | 0,735 | 35 | 0,334 | 0,430 | 95 | 0,202 | 0,263 |
| 12 | 0,576 | 0,708 | 36 | 0,329 | 0,424 | 100 | 0,195 | 0,256 |
| 13 | 0,553 | 0,684 | 37 | 0,325 | 0,418 | 12 | 0,176 | 0,230 |
| 14 | 0,532 | 0,661 | 38 | 0,320 | 0,413 | 15 | 0,159 | 0,210 |
| 15 | 0,514 | 0,641 | 39 | 0,316 | 0,408 | 17 | 0,148 | 0,194 |
| 16 | 0,497 | 0,623 | 40 | 0,312 | 0,403 | 20 | 0,138 | 0,181 |
| 17 | 0,482 | 0,606 | 41 | 0,308 | 0,398 | 30 | 0,113 | 0,148 |
| 18 | 0,468 | 0,590 | 42 | 0,304 | 0,393 | 40 | 0,098 | 0,128 |
| 19 | 0,456 | 0,575 | 43 | 0,301 | 0,389 | 50 | 0,088 | 0,115 |
| 20 | 0,444 | 0,561 | 44 | 0,297 | 0,384 | 60 | 0,080 | 0,105 |
| 21 | 0,433 | 0,549 | 45 | 0,294 | 0,380 | 700 | 0,074 | 0,097 |
| 22 | 0,423 | 0,537 | 46 | 0,291 | 0,376 | 800 | 0,070 | 0,091 |
| 23 | 0,413 | 0,526 | 47 | 0,288 | 0,372 | 900 | 0,065 | 0,086 |
| 24 | 0,404 | 0,515 | 48 | 0,284 | 0,368 | 1000 | 0,062 | 0,081 |
| 25 | 0,396 | 0,505 | 49 | 0,281 | 0,364 | | | |
| 26 | 0,388 | 0,496 | 50 | 0,279 | 0,361 | | | |

Lampiran 15. Tindakan Berdasarkan Validitas Soal

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|----------|-------------------------------|--------------------------|---|--|---|---|
| 1 | Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi mudah. Pilihan jawaban tidak homogen | Konstrak : pilihan jawaban tidak logis | Mampu membedakan prestasi siswa | Disimpan di bank soal. Mengubah pilihan jawaban menjadi homogen agar soal memiliki tingkat kesukaran baik |
| 2 | Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi sangat mudah. | Konstrak : pilihan jawaban tidak logis | Mampu membedakan prestasi siswa | Disimpan di bank soal. Mengubah pilihan jawaban menjadi homogen agar soal memiliki tingkat kesukaran baik |
| 3 | Valid | C1 (Mengingat) | Jawaban sulit diprediksi membuat soal memiliki tingkat kesukaran baik (c dan d) Tingkat kesulitan soal tepat dengan kemampuan siswa. | Konstrak : pilihan jawaban logis | Mampu membedakan prestasi siswa. | Disimpan di bank soal. |
| 4 | Tidak Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi sangat mudah. | Konstrak : pilihan jawaban tidak logis Menggunakan “kecuali” | Tidak mengukur sesuai fungsi dan tujuan | Direvisi, meningkatkan level kesulitan soal dengan menghilangkan konstruksi soal “kecuali” dan membuat pilihan jawaban menjadi homogen Dibuang, karna terlalu mudah yang mengakibatkan tidak mampu membedakan prestasi siswa |
| 5 | Valid | C1 (Mengingat) | Jawaban sulit diprediksi membuat soal memiliki tingkat kesukaran baik (a dan b) Tidak ada kalimat tanya pada soal | Konstrak : pertanyaan tidak tegas Bahasa : Kalimat tidak | Mampu membedakan prestasi siswa | Disimpan di bank soal. Revisi, memunculkan pertanyaan yang tegas dengan lingkup yang jelas agar tidak ada kerancuan. |

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|----------|-------------------------------|--------------------------|--|---|---|---|
| | | | | komunikatif | | |
| 6 | Tidak Valid | C1 (Mengingat) | Jawaban sulit diprediksi membuat soal memiliki tingkat kesukaran baik. Pilihan jawaban homogen (a,b dan d) sehingga siswa berpotensi terjebak lebih besar | Konstrak : pilihan jawaban logis | Tidak mengukur sesuai fungsi dan tujuan Terbalik dalam membedakan siswa pintar dan kurang pintar | Dibuang, karna tidak dapat memberikan kedudukan antara siswa pintar dan kurang pintar. |
| 7 | Tidak Valid | C1 (Mengingat) | Jawaban sulit diprediksi membuat soal memiliki tingkat kesukaran baik Tidak ada kalimat tanya pada soal. Ada dua kalimat dalam soal | Konstrak : pertanyaan tidak tegas Bahasa : Kalimat tidak komunikatif | Tidak mengukur sesuai fungsi dan tujuan Terbalik dalam membedakan siswa pintar dan kurang pintar | Direvisi, menurunkan level kesulitan soal dengan memunculkan pertanyaan yang tegas dengan lingkup yang jelas agar tidak ada kerancuan. Dibuang, karna terlalu mudah yang mengakibatkan tidak mampu membedakan prestasi siswa |
| 8 | Valid | C1 (Mengingat) | Kesesuaian tingkat kesulitan soal dengan kemampuan siswa | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 9 | Valid | C1 (Mengingat) | Jawaban sulit diprediksi karna secara bahasa terlihat homogen | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 10 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal tidak tepat dengan kemampuan siswa. Jawaban sangat sulit diprediksi membuat soal memiliki tingkat kesukaran tinggi Faktor Siswa dalam menjawab | Konstrak : pertanyaan tidak tegas tentang satu fungsi atau sebuah jalan metodologi. | Tidak mengukur sesuai fungsi dan tujuan: Tidak sesuai dengan kemampuan siswa karna terlalu sulit | Direvisi, menurunkan level kesulitan soal dengan memunculkan pertanyaan yang tegas dengan lingkup yang jelas agar tidak ada kerancuan. Dibuang, karna level soal terlalu |

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|-----------------|--------------------------------------|---------------------------------|--|---|---|---|
| | | | | | | sulit. |
| 11 | Valid | C1 (Mengingat) | Kesesuaian tingkat kesulitan soal dengan kemampuan siswa | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 12 | Tidak Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi mudah. Faktor Siswa dalam menjawab | Konstrak : pilihan jawaban tidak logis mengakibatkan tidak mengecoh | Mampu membedakan prestasi siswa | Direvisi, meningkatkan level kesulitan soal dengan mengubah pilihan jawaban menjadi homogen Dibuang, karna tidak valid |
| 13 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal tidak sesuai dengan kemampuan siswa Jawaban sulit diprediksi karna secara bahasa terlihat homogen (a dan c) Faktor siswa dalam menjawab | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan. | Dibuang, karna tidak valid. |
| 14 | Valid | C1 (Mengingat) | Kesesuaian tingkat kesulitan soal dengan kemampuan siswa Jawaban secara bahasa terlihat homogen | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 15 | Tidak Valid | C1 (Mengingat) | Jawaban sulit diprediksi karna homogen (a dan b) membuat soal memiliki tingkat kesukaran baik. | Konstrak : pertanyaan jelas, lingkup jawaban jelas, pilihan jawaban logis | Tidak mengukur sesuai fungsi dan tujuan Terbalik dalam membedakan siswa pintar dan kurang pintar | Dibuang, karna tidak dapat memberikan kedudukan antara siswa pintar dan kurang pintar. |
| 16 | Valid | C1 (Mengingat) | Jawaban secara bahasa terlihat homogen (dengan “zise”) | Konstrak : pertanyaan tegas dan | Mampu membedakan | Disimpan di bank soal. |

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|-----------------|--------------------------------------|---------------------------------|--|--|---|---|
| | | | Jawaban terlihat jelas membuat soal memiliki tingkat kesukaran mudah | jelas. | prestasi siswa | |
| 17 | Tidak Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi sangat mudah. Pilihan jawaban menggunakan gambar yang secara konseptual yang memiliki fungsi pasti, artinya tidak homogen. | Konstrak : pilihan jawaban tidak logis | Tidak mengukur sesuai fungsi dan tujuan | Dibuang, karna terlalu mudah yang mengakibatkan tidak mampu membedakan prestasi siswa |
| 18 | Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi sangat mudah. | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 19 | Valid | C1 (Mengingat) | Jawaban sulit diprediksi membuat soal memiliki tingkat kesukaran baik (b dan c) | Konstrak : pertanyaan jelas dan tegas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 20 | Valid | C1 (Mengingat) | Kesesuaian tingkat kesulitan soal dengan kemampuan siswa Jawaban bisa diprediksi membuat soal menjadi sangat mudah. | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 21 | Valid | C1 (Mengingat) | Jawaban sulit diprediksi membuat soal memiliki tingkat kesukaran baik | Konstrak : pertanyaan jelas dan tegas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 22 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal tidak sesuai dengan kemampuan siswa | Konstrak : pertanyaan jelas dan tegas | Tidak mengukur sesuai fungsi dan tujuan | Dibuang, karna terlalu sukar yang mengakibatkan tidak mampu membedakan prestasi siswa |

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|-----------------|--------------------------------------|---------------------------------|--|--|--|---|
| | | | Jawaban sulit diprediksi membuat soal menjadi sangat sukar. Pilihan jawaban homogen dengan pertanyaan (a dan d) sehingga siswa berpotensi terjebak lebih besar | | | |
| 23 | Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi sangat mudah. Pilihan jawaban homogen. | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 24 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa Pilihan jawaban (a dan b) homogen membuat tidak bisa diprediksi | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan. Terbalik dalam membedakan siswa pintar dan kurang pintar | Dibuang, karna terlalu sukar yang mengakibatkan tidak mampu membedakan prestasi siswa |
| 25 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal tidak sesuai dengan kemampuan siswa. Pilihan jawaban (d dan e) homogen membuat tidak bisa diprediksi | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan. | Dibuang, karna terlalu sukar yang mengakibatkan tidak mampu membedakan prestasi siswa |
| 26 | Valid | C1 (Mengingat) | Jawaban sulit diprediksi membuat soal memiliki tingkat kesukaran baik | Konstrak : pertanyaan jelas dan tegas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 27 | Tidak Valid | C1 (Mengingat) | Pilihan jawaban (“..tool”) homogen namun jawaban mudah diprediksi membuat soal | Konstrak : pertanyaan jelas dan tegas. | Tidak mengukur sesuai fungsi dan tujuan. | Dibuang, karna terlalu mudah yang mengakibatkan tidak mampu membedakan prestasi siswa |

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|----------|-------------------------------|--------------------------|--|---|--|--|
| | | | memiliki tingkat kesukaran sangat mudah Faktor Siswa dalam menjawab | pilihan jawaban logis | | |
| 28 | Tidak Valid | C1 (Mengingat) | Pilihan jawaban homogen namun tidak berhubungan dengan pilihan pertanyaan | Konstrak : pertanyaan jelas dan tegas. Pilihan jawaban logis | Tidak mengukur sesuai fungsi dan tujuan. | Dibuang, karna pertanyaan tidak tepat. Asumsi, seharusnya ada kalimat "kecuali" namun tidak tercantum yang mengakibatkan tidak mampu membedakan prestasi siswa |
| 29 | Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi sangat mudah. Pilihan jawaban homogen. | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal. |
| 30 | Valid | C1 (Mengingat) | Jawaban bisa diprediksi membuat soal menjadi sangat mudah. Pilihan jawaban menggunakan gambar yang secara konseptual yang memiliki fungsi pasti, artinya tidak homogen. | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan. | Disimpan di bank soal karna valid dalam aspek representatif konsep isi |
| 31 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. Terdapat dua pilihan jawaban yang sama "lasso tool" (a dan b) dan mayoritas siswa memilih jawaban tersebut | Konstrak : pertanyaan tegas dan jelas Pilihan jawaban rancu | Tidak mengukur sesuai fungsi dan tujuan. | Dibuang, karna jawaban dari soal ada dua |
| 32 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. Faktor Siswa dalam menjawab | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan. | Dibuang, karna soal tidak mampu membedakan prestasi siswa |
| 33 | Valid | C1 | Jawaban bisa diprediksi | Konstrak : | Mampu | Disimpan di bank soal karna valid |

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|-----------------|--------------------------------------|---------------------------------|--|---|---|--|
| | | (Mengingat) | membuat soal menjadi sangat mudah. | pertanyaan tegas dan jelas | membedakan prestasi siswa | dalam aspek representatif konsep isi serta mampu membedakan prestasi siswa |
| 34 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. Jawaban bisa diprediksi membuat soal menjadi sangat mudah. | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan | Dibuang, karna terlalu mudah yang mengakibatkan tidak mampu membedakan prestasi siswa |
| 35 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. Pilihan jawaban homogen secara konsep karna bisa dijawab dengan a dan b | Konstrak : pertanyaan tegas Lingkup jawaban tidak jelas | Tidak mengukur sesuai fungsi dan tujuan. | Dibuang, karna tidak mampu membedakan prestasi siswa serta memiliki kerancuan terhadap jawaban a dan b |
| 36 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. Pilihan jawaban homogen (tool..). Faktor Siswa dalam menjawab | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan. Terbalik dalam membedakan siswa pintar dan kurang pintar | Dibuang, karna tidak mampu membedakan prestasi siswa |
| 37 | Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. Jawaban sulit diprediksi membuat Pilihan jawaban homogen | Konstrak : pertanyaan tegas dan jelas | Mampu membedakan prestasi siswa | Disimpan di bank soal karna valid |
| 38 | Tidak Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. Pilihan jawaban homogen Faktor Siswa dalam menjawab : Asumsi adanya kecurangan | Konstrak : pertanyaan tegas dan jelas | Tidak mengukur sesuai fungsi dan tujuan. Terbalik dalam membedakan siswa | Dibuang, karna tidak mampu membedakan prestasi siswa |

| No. Soal | Keterangan Arikunto (2016:89) | Tipe Soal Aspek Kognitif | Faktor | Aspek | Keterangan | Tindak Lanjut |
|-----------------|--------------------------------------|---------------------------------|---|--|---|--|
| | | | dalam tes yang membuat semua siswa kelas A menjawab b dan mayoritas siswa kelas B menjawab c | | pintar dan kurang pintar | |
| 39 | Tidak Valid | C1 (Mengingat) | Pilihan jawaban homogen (pallette..) Pilihan jawaban e dan c memiliki posisi yang “tertukar” yang mengakibatkan siswa dapat terjerumus dalam menjawab | Konstrak : pertanyaan tegas dan jelas Pilihan jawaban logis namun tempatnya tertukar | Tidak mengukur sesuai fungsi dan tujuan. Terbalik dalam membedakan siswa pintar dan kurang pintar | Dibuang, karna tidak mampu membedakan prestasi siswa Revisi, memnukar kembali posisi e dan c |
| 40 | Valid | C1 (Mengingat) | Tingkat kesulitan soal sesuai dengan kemampuan siswa. | Konstrak : pertanyaan tegas dan jelas Pilihan jawaban logis | Mampu membedakan prestasi siswa | Disimpan, karna dapat memberikan kedudukan antara siswa pintar dan kurang pintar |

Lampiran 16. Tindakan Berdasarkan Pengecoh Soal

| No. Soal | Jawaban | A | B | C | D | E | Kualitas | Nilai | Faktor | Tindakan |
|----------|---------|----|----|----|----|----|-------------|-------|---|---|
| 1 | 33 | 0 | 4 | 3 | 33 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis artinya secara logika bisa mengecoh bila disandingkan dengan pertanyaan tersebut (kuning) Jawaban terlalu mencolok (merah) Jumlah pilihan jawaban hanya 4 sedangkan anak SMK seharusnya 5 pilihan jawaban | Mengganti a dan b karna kualitasnya jelek dan sangat jelek Menambahkan satu opsi jawaban untuk melengkapi pilihan jawaban menjadi 5 karna level pengecoh pada siswa SMK sederhana layakanya ada lima |
| 2 | 35 | 4 | 1 | 0 | 0 | 35 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok | Mengganti a (sangat jelek),c (jelek) dan d (jelek) |
| 3 | 27 | 0 | 0 | 27 | 13 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Jumlah pilihan jawaban hanya 4 | Mengganti a (jelek),b (jelek) dan d (sangat jelek) Menambahkan satu opsi jawaban |
| 4 | 39 | 39 | 1 | 0 | 0 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Jumlah pilihan jawaban hanya 4 | Mengganti b (sangat jelek),c (jelek) dan d (jelek) Menambahkan satu opsi jawaban soal perlu dihapus karna tidak relevan dan terlalu mudah. |
| 5 | 18 | 14 | 18 | 0 | 7 | 1 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) Jumlah pilihan jawaban hanya 4 | Mengganti a (sangat jelek), dan c (jelek) Menambahkan satu opsi jawaban |
| 6 | 21 | 1 | 21 | 1 | 16 | 1 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) | Mengganti a (jelek), c (jelek), d (sangat jelek), dan e (jelek) |
| 7 | 9 | 9 | 0 | 28 | 3 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) Jumlah pilihan jawaban hanya 4 | Mengganti b (jelek), dan c (sangat jelek) Menambahkan satu opsi jawaban |
| 8 | 26 | 1 | 26 | 9 | 2 | 2 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Pengecoh terjawab merata | Mengganti c (sangat jelek) Menerima opsi jawaban karna akumulasi kualitas cukup baik |

| No. Soal | Jawaban | A | B | C | D | E | Kualitas | Nilai | Faktor | Tindakan |
|----------|---------|----|----|----|----|----|-------------|-------|---|---|
| | | | | | | | | | | Menambahkan satu opsi jawaban |
| 9 | 29 | 29 | 5 | 1 | 5 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. Size) Jumlah pilihan jawaban hanya 4 Jawaban terlalu mencolok | Mengganti b (jelek) dan d (jelek) Menambahkan satu opsi jawaban |
| 10 | 6 | 8 | 2 | 15 | 6 | 9 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. Horizontal) Jumlah pilihan jawaban hanya 4 | Mengganti b (jelek) dan c (jelek) Menerima opsi jawaban (cukup baik) Menambahkan satu opsi jawaban |
| 11 | 26 | 3 | 26 | 1 | 2 | 8 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban kurang logis (c dan d) Jawaban terlalu mencolok | Mengganti e (sangat jelek) Menerima opsi jawaban (cukup baik) |
| 12 | 28 | 6 | 0 | 0 | 28 | 6 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis kecuali opsi 'e' Jawaban terlalu mencolok | Mengganti a (sangat jelek), b (jelek), c (jelek) dan e (sangat jelek) |
| 13 | 15 | 16 | 4 | 15 | 3 | 2 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. Rotate..) Jumlah pilihan jawaban hanya 4 | Mengganti a (sangat jelek) Menambahkan satu opsi jawaban |
| 14 | 31 | 5 | 31 | 2 | 1 | 1 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok | Mengganti a (sangat jelek) |
| 15 | 25 | 25 | 11 | 2 | 2 | 0 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. Gambar..) Jawaban terlalu mencolok | Mengganti b (sangat jelek) dan e (jelek) Menerima opsi jawaban (cukup baik) |
| 16 | 31 | 3 | 2 | 0 | 4 | 31 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. size..) Jawaban terlalu mencolok | Mengganti c (jelek), dan d (jelek) Menerima opsi jawaban (cukup baik) |
| 17 | 39 | 0 | 0 | 39 | 1 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. size..) Jawaban terlalu mencolok Pilihan jawaban menggunakan gambar yang secara konseptual yang memiliki fungsi pasti, | Mengganti a (jelek), b (jelek), d (sangat jelek) dan e (jelek) Soal perlu dihapus karna tidak relevan dan terlalu mudah. |

| No. Soal | Jawaban | A | B | C | D | E | Kualitas | Nilai | Faktor | Tindakan |
|----------|---------|----|----|----|----|----|-------------|-------|---|---|
| | | | | | | | | | artinya tidak homogen. | |
| 18 | 36 | 3 | 36 | 0 | 0 | 1 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Pilihan jawaban kurang logis (d dan e) | Mengganti a (sangat jelek), c (jelek) dan d (jelek) |
| 19 | 16 | 5 | 16 | 16 | 1 | 0 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) Jumlah pilihan jawaban hanya 4 | Mengganti b (sangat jelek), dan d (jelek) Menambahkan satu opsi jawaban |
| 20 | 35 | 35 | 1 | 2 | 2 | 0 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Pilihan jawaban homogen (.. layer) Jumlah pilihan jawaban hanya 4 | Menambahkan satu opsi jawaban |
| 21 | 17 | 6 | 2 | 0 | 15 | 17 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. layer) | Mengganti c (jelek) dan d (sangat jelek) |
| 22 | 2 | 14 | 2 | 3 | 19 | 1 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis kecuali (c dan e) Pilihan jawaban a dan d berhasil mengecoh karna terdapat hubungan antara pertanyaan “memilih warna” ke opsi jawaban a “.. select” dan d “Colour..” | Mengganti c (sangat jelek) dan d (jelek) Soal perlu dihapus karna tidak relevan dan terlalu sukar. |
| 23 | 32 | 2 | 1 | 32 | 1 | 4 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. Adjustments, image) Jawaban terlalu mencolok | Mengganti e (sangat jelek) |
| 24 | 13 | 13 | 13 | 3 | 3 | 8 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban tidak logis kecuali c,d dan e | Mengganti opsi b (jelek) |
| 25 | 10 | 2 | 5 | 7 | 10 | 16 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis kecuali a dan b | Mengganti opsi e (sangat jelek) Menerima opsi jawaban (cukup baik) Meningkatkan level soal |
| 26 | 23 | 0 | 23 | 0 | 4 | 13 | kurang | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis | Menambahkan satu opsi jawaban |

| No. Soal | Jawaban | A | B | C | D | E | Kualitas | Nilai | Faktor | Tindakan |
|----------|---------|----|----|----|----|---|-------------|-------|--|--|
| | | | | | | | baik | | <ul style="list-style-type: none"> Jumlah pilihan jawaban hanya 4 Pilihan jawaban e dan c memiliki posisi yang “salah” yang mengakibatkan siswa dapat terjerumus dalam menjawab | Mengganti opsi jawaban e ke c Mengganti a (jelek) |
| 27 | 35 | 1 | 2 | 35 | 0 | 1 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Pilihan jawaban homogen (.. tool) Jumlah pilihan jawaban hanya 4 | Menambahkan satu opsi jawaban Menerima opsi jawaban (cukup baik) Soal perlu dihapus karna tidak relevan dan terlalu mudah. Mengganti opsi jawaban d (jelek) |
| 28 | 40 | 15 | 0 | 23 | 0 | 2 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis kecuali e Pilihan jawaban homogen (.. color) Karna tidak sehubungan dengan soal maka apapun jawabannya dianggap benar / bonus | Jika soal sudah diberi kata “kecuali” soal bisa digunakan kembali Mengganti opsi jawaban e karna mencolok tidak homogen |
| 29 | 35 | 5 | 0 | 0 | 35 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Pilihan jawaban homogen (.. image) | Terlalu mudah untuk siswa. Karna tipe soal adalah c1 maka faktor utama adalah siswa maka soal perlu dihapus karna tidak relevan dan terlalu mudah. |
| 30 | 37 | 1 | 1 | 0 | 37 | 1 | baik | 3 | <ul style="list-style-type: none"> Pilihan jawaban logis Jawaban terlalu mencolok Pilihan jawaban menggunakan gambar yang secara konseptual yang memiliki fungsi pasti, artinya tidak homogen. | Menerima opsi jawaban (baik) Meningkatkan level kesukaran dengan mengubah dari opsi tipe gambar menjadi opsi kalimat dengan soal bergambar |
| 31 | 18 | 18 | 11 | 10 | 1 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) Jumlah pilihan jawaban hanya 4 Terdapat dua pilihan jawaban yang sama ”lasso tool” (a dan b) dan mayoritas siswa memilih jawaban tersebut | Mengganti c (jelek) dan d (jelek) karna terlalu ketara Mengganti a dan b kemudian meluruskan maksud soal tersebut |
| 32 | 23 | 8 | 23 | 8 | 0 | 0 | tidak | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis | Menambahkan satu opsi jawaban |

| No. Soal | Jawaban | A | B | C | D | E | Kualitas | Nilai | Faktor | Tindakan |
|----------|---------|----|----|----|----|----|-------------|-------|---|--|
| | | | | | | | baik | | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. tool) Jawaban terlalu mencolok Jumlah pilihan jawaban hanya 4 | Mengganti a (jelek), c (jelek), dan d (jelek) karna sangat mudah ditebak |
| 33 | 32 | 0 | 6 | 2 | 32 | 0 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) Jawaban terlalu mencolok Jumlah pilihan jawaban hanya 4 | Menambahkan satu opsi jawaban Mengganti a (jelek), dan b (sangat jelek) karna sangat mudah ditebak |
| 34 | 39 | 39 | 0 | 0 | 1 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) Jawaban terlalu mencolok Jumlah pilihan jawaban hanya 4 | Menambahkan satu opsi jawaban Mengganti b (jelek), c (jelek), dan d (sangat jelek) karna sangat mudah ditebak |
| 35 | 24 | 12 | 24 | 2 | 1 | 1 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis | Mengganti a (sangat jelek), d (jelek) dan e (jelek) karna sangat mudah ditebak |
| 36 | 19 | 0 | 1 | 3 | 19 | 17 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (..tool) | Mengganti a (jelek),b (jelek), dan e karna sangat mudah ditebak |
| 37 | 23 | 1 | 10 | 5 | 1 | 23 | kurang baik | 1 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (tool..) | Mengganti a (jelek),b (sangat jelek), dan d karna sangat mudah ditebak |
| 38 | 23 | 0 | 23 | 17 | 0 | 0 | tidak baik | 0 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) Jumlah pilihan jawaban hanya 4 | Menambahkan satu opsi jawaban Mengganti a (jelek), c (jelek), dan d (jelek) karna sangat mudah ditebak |
| 39 | 9 | 14 | 0 | 10 | 7 | 9 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. pallete) Pilihan jawaban e dan c memiliki posisi yang “tertukar” yang mengakibatkan siswa dapat terjerumus dalam menjawab | Mengganti a (jelek) dan b (jelek) karna sangat mudah ditebak Menukar opsi jawaban e ke c dan sebaliknya Menerima opsi jawaban (cukup baik) |
| 40 | 17 | 4 | 1 | 5 | 13 | 17 | cukup baik | 2 | <ul style="list-style-type: none"> Pilihan jawaban logis | Mengganti b (jelek) dan d (sangat jelek) karna sangat mudah ditebak Menerima opsi jawaban (cukup baik) |

Lampiran 17. Tindakan Berdasarkan Kesukaran Soal

| No. Soal | Jml Benar | Tafsir | Keterangan Farida, (2017:156) | Faktor | Tindakan |
|----------|-----------|--------------|----------------------------------|---|--|
| 1 | 33 | Mudah | Mudah | <ul style="list-style-type: none"> Jawaban mudah di prediksi Jawaban terlalu mencolok | <ul style="list-style-type: none"> Disimpan di bank soal |
| 2 | 35 | Sangat Mudah | Mudah | <ul style="list-style-type: none"> Jawaban mudah di prediksi | <ul style="list-style-type: none"> Dibuang karna sangat mudah Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 3 | 27 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal |
| 4 | 39 | Sangat Mudah | Mudah | <ul style="list-style-type: none"> Jawaban mudah di prediksi | <ul style="list-style-type: none"> Dibuang karna sangat mudah Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 5 | 18 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal |
| 6 | 21 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal |
| 7 | 9 | Sukar | Sukar | <ul style="list-style-type: none"> Jawaban sulit di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal Revisi mengubah tipe soal berdasarkan aspek kognitif untuk mengurangi kesulitan soal Revisi konstruk terkait pertanyaan soal |
| 8 | 26 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi Konstruksi soal meminta siswa untuk membayangkan | <ul style="list-style-type: none"> Disimpan di bank soal |
| 9 | 29 | Mudah | Mudah | <ul style="list-style-type: none"> Jawaban mudah di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 10 | 6 | Sangat Sukar | Sukar | <ul style="list-style-type: none"> Jawaban sulit di prediksi Faktor jawaban siswa | <ul style="list-style-type: none"> Dibuang karna sangat sukar Revisi mengubah tipe soal berdasarkan aspek kognitif untuk mengurangi |

| | | | | | |
|----|----|--------------|--------|---|--|
| | | | | | kesulitan soal |
| 11 | 26 | Sedang | Sedang | • Jawaban tidak dapat di prediksi | • Disimpan di bank soal |
| 12 | 28 | Sedang | Mudah | • Jawaban mudah di prediksi • Faktor jawaban siswa | • Disimpan di bank soal |
| 13 | 15 | Sedang | Sedang | • Jawaban tidak dapat di prediksi • Faktor jawaban siswa | • Disimpan di bank soal |
| 14 | 31 | Mudah | Mudah | • Jawaban mudah di prediksi | • Disimpan di bank soal |
| 15 | 25 | Sedang | Sedang | • Jawaban tidak dapat di prediksi | • Disimpan di bank soal |
| 16 | 31 | Mudah | Mudah | • Jawaban mudah di prediksi | • Disimpan di bank soal • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 17 | 39 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi | • Dibuang karna sangat mudah • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 18 | 36 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi | • Dibuang karna sangat mudah • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 19 | 16 | Sedang | Sedang | • Jawaban sulit di prediksi | • Disimpan di bank soal |
| 20 | 35 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi | • Dibuang karna sangat mudah • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 21 | 17 | Sedang | Sedang | • Jawaban tidak dapat di prediksi | • Disimpan di bank soal |
| 22 | 2 | Sangat Sukar | Sukar | • Jawaban sulit di prediksi • Faktor jawaban siswa | • Dibuang karna sangat sukar • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk mengurangi kesulitan soal |
| 23 | 32 | Mudah | Mudah | • Jawaban mudah di prediksi | • Disimpan di bank soal • Revisi mengubah tipe soal berdasarkan |

| | | | | | |
|----|----|--------------|--------|---|--|
| | | | | | aspek kognitif untuk meningkatkan kesulitan soal |
| 24 | 13 | Sedang | Sedang | • Jawaban tidak dapat di prediksi | • Disimpan di bank soal |
| 25 | 10 | Sukar | Sukar | • Jawaban sulit di prediksi | • Disimpan di bank soal • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk mengurangi kesulitan soal |
| 26 | 23 | Sedang | Sedang | • Jawaban tidak dapat di prediksi | • Disimpan di bank soal |
| 27 | 35 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi • Faktor jawaban siswa | • Dibuang karna sangat mudah • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 28 | 40 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi | • Dibuang karna sangat mudah • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 29 | 35 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi • Faktor jawaban siswa | • Dibuang karna sangat mudah • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 30 | 37 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi • Faktor jawaban siswa | • Dibuang karna sangat mudah • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 31 | 18 | Sedang | Sedang | • Jawaban tidak dapat di prediksi | • Disimpan di bank soal |
| 32 | 23 | Sedang | Sedang | • Jawaban tidak dapat di prediksi • Faktor jawaban siswa | • Disimpan di bank soal |
| 33 | 32 | Mudah | Mudah | • Jawaban mudah di prediksi | • Disimpan di bank soal • Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 34 | 39 | Sangat Mudah | Mudah | • Jawaban mudah di prediksi | • Dibuang karna sangat mudah |

| | | | | | |
|----|----|--------|--------|---|---|
| | | | | <ul style="list-style-type: none"> Faktor jawaban siswa | <ul style="list-style-type: none"> Revisi mengubah tipe soal berdasarkan aspek kognitif untuk meningkatkan kesulitan soal |
| 35 | 24 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal |
| 36 | 19 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi Faktor jawaban siswa | <ul style="list-style-type: none"> Disimpan di bank soal |
| 37 | 23 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal |
| 38 | 23 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi Faktor jawaban siswa | <ul style="list-style-type: none"> Disimpan di bank soal |
| 39 | 9 | Sukar | Sukar | <ul style="list-style-type: none"> Jawaban sulit di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal Revisi mengubah tipe soal berdasarkan aspek kognitif untuk mengurangi kesulitan soal |
| 40 | 17 | Sedang | Sedang | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi | <ul style="list-style-type: none"> Disimpan di bank soal |

Lampiran 18. Tindakan Berdasarkan Daya Pembeda Soal

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Tafsir | Keterangan Arikunto, (2016:232) | Faktor | Tindakan |
|----------|-----------|------------|------|---------------|--------------|---------------------------------|---|---|
| 1 | 11 | 6 | 5 | 45,45 | Mudah | Baik | <ul style="list-style-type: none"> Pilihan jawaban logis artinya secara logika bisa mengecoh bila disandingkan dengan pertanyaan tersebut Jawaban terlalu mencolok Jumlah pilihan jawaban hanya 4 sedangkan anak SMK seharusnya 5 pilihan jawaban artinya tingkat kesulitan tes sedikit dipermudah dengan berkurangnya opsi jawaban Soal terasa mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 2 | 11 | 6 | 5 | 45,45 | Sangat Mudah | Baik | <ul style="list-style-type: none"> Jawaban terlalu mencolok Soal sangat mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 3 | 10 | 6 | 4 | 36,36 | Sedang | Cukup | <ul style="list-style-type: none"> Jawaban terlalu mencolok Jawaban tidak dapat di prediksi Kesesuaian tingkat kesulitan tes terhadap kemampuan siswa. Soal akan terasa sulit untuk siswa dengan kemampuan rendah, soal dapat dikerjakan oleh siswa kemampuan cukup, dan soal sangat mudah dijawab oleh siswa kemampuan tinggi (pintar) | Disimpan di bank soal |
| 4 | 11 | 10 | 1 | 9,09 | Sangat Mudah | Jelek | <ul style="list-style-type: none"> Jawaban terlalu mencolok Jumlah pilihan jawaban hanya 4 Jawaban mudah di prediksi Kesesuaian tingkat kesulitan tes terhadap kemampuan siswa Soal sangat mudah untuk dijawab mayoritas siswa | Dibuang karna masuk kategori sangat mudah Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 5 | 8 | 3 | 5 | 45,45 | Sedang | Baik | <ul style="list-style-type: none"> Pilihan jawaban homogen (... tool) Jumlah pilihan jawaban hanya 4 Jawaban tidak dapat di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Disimpan di bank soal |
| 6 | 5 | 7 | -2 | -18,18 | Sedang | Sangat Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (... tool) Jawaban tidak dapat di prediksi | Dibuang karna memiliki fungsi yang terbalik |

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Tafsir | Keterangan Arikunto, (2016:232) | Faktor | Tindakan |
|----------|-----------|------------|------|---------------|--------------|---------------------------------|--|---|
| | | | | | | | <ul style="list-style-type: none"> Tingkat kesulitan tes sesuai terhadap kemampuan siswa | |
| 7 | 3 | 5 | -2 | -18,18 | Sukar | Sangat Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. tool) Jumlah pilihan jawaban hanya 4 Jawaban sulit di prediksi Soal terasa sulit untuk mayoritas siswa | Dibuang karna memiliki fungsi yang terbalik |
| 8 | 10 | 1 | 9 | 81,82 | Sedang | Baik Sekali | <ul style="list-style-type: none"> Jawaban terlalu mencolok Pengecoh terjawab merata Jawaban tidak dapat di prediksi Konstruksi soal meminta siswa untuk membayangkan Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Disimpan di bank soal |
| 9 | 11 | 7 | 4 | 36,36 | Mudah | Cukup | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. Size) Jawaban terlalu mencolok Jawaban mudah di prediksi Soal terasa mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 10 | 4 | 1 | 3 | 27,27 | Sangat Sukar | Cukup | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. Horizontal) Jawaban sulit di prediksi Faktor jawaban siswa Soal terasa sukar untuk mayoritas siswa | Disimpan di bank soal Revisi mengurangi kesulitan soal agar masuk dalam kategori cukup |
| 11 | 10 | 6 | 4 | 36,36 | Sedang | Cukup | <ul style="list-style-type: none"> Pilihan jawaban kurang logis (c dan d) Jawaban terlalu mencolok Jawaban tidak dapat di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Disimpan di bank soal |
| 12 | 11 | 6 | 5 | 45,45 | Sedang | Baik | <ul style="list-style-type: none"> Pilihan jawaban logis kecuali opsi 'e' Jawaban terlalu mencolok Jawaban mudah di prediksi Faktor jawaban siswa Soal terasa mudah untuk dijawab mayoritas siswa | Disimpan di bank soal |
| 13 | 7 | 4 | 3 | 27,27 | Sedang | Cukup | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. Rotate..) | Disimpan di bank soal |

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Tafsir | Keterangan Arikunto, (2016:232) | Faktor | Tindakan |
|----------|-----------|------------|------|---------------|--------------|---------------------------------|---|---|
| | | | | | | | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi Faktor jawaban siswa Tingkat kesulitan tes sesuai terhadap kemampuan siswa | |
| 14 | 10 | 4 | 6 | 54,55 | Mudah | Baik | <ul style="list-style-type: none"> Jawaban terlalu mencolok Jawaban mudah di prediksi Soal terasa mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 15 | 5 | 8 | -3 | -27,27 | Sedang | Sangat Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. Gambar..) Jawaban terlalu mencolok Jawaban tidak dapat di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Dibuang karna memiliki fungsi yang terbalik |
| 16 | 11 | 2 | 9 | 81,82 | Mudah | Baik Sekali | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. size..) Jawaban terlalu mencolok Jawaban mudah di prediksi Soal terasa mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 17 | 11 | 11 | 0 | 0 | Sangat Mudah | Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. size..) Jawaban terlalu mencolok Pilihan jawaban menggunakan gambar yang secara konseptual yang memiliki fungsi pasti, artinya tidak homogen. Jawaban mudah di prediksi Soal sangat mudah untuk dijawab mayoritas siswa | Dibuang karna masuk dalam kategori sangat mudah Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 18 | 11 | 8 | 3 | 27,27 | Sangat Mudah | Cukup | <ul style="list-style-type: none"> Jawaban terlalu mencolok Pilihan jawaban kurang logis (d dan e) Jawaban mudah di prediksi Soal sangat mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Dibuang karna masuk kategori sangat mudah Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 19 | 11 | 0 | 11 | 100 | Sedang | Baik Sekali | <ul style="list-style-type: none"> Pilihan jawaban logis Pilihan jawaban homogen (.. tool) | Disimpan di bank soal |

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Tafsir | Keterangan Arikunto, (2016:232) | Faktor | Tindakan |
|----------|-----------|------------|------|---------------|--------------|---------------------------------|---|--|
| | | | | | | | <ul style="list-style-type: none"> Jawaban sulit di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | |
| 20 | 11 | 8 | 3 | 27,27 | Sangat Mudah | Cukup | <ul style="list-style-type: none"> Jawaban terlalu mencolok Pilihan jawaban homogen (.. layer) Jawaban mudah di prediksi Soal sangat mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup Dibuang, karna sangat mudah untuk siswa |
| 21 | 8 | 2 | 6 | 54,55 | Sedang | Baik | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. layer) Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Disimpan di bank soal |
| 22 | 1 | 1 | 0 | 0 | Sangat Sukar | Jelek | <ul style="list-style-type: none"> Pilihan jawaban logis kecuali (c dan e) Pilihan jawaban a dan d berhasil mengecoh karna terdapat hubungan antara pertanyaan “memilih warna” ke opsi jawaban a “.. select” dan d “Colour..” Jawaban sulit di prediksi Soal sangat sukar untuk mayoritas siswa | Dibuang karna sangat sulit untuk siswa Revisi mengurangi kesulitan soal agar masuk dalam kategori cukup |
| 23 | 10 | 5 | 5 | 45,45 | Mudah | Baik | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. Adjustments, image) Jawaban terlalu mencolok Jawaban mudah di prediksi Soal terasa mudah untuk dijawab mayoritas siswa | Disimpan di bank soal |
| 24 | 2 | 7 | -5 | -45,45 | Sedang | Sangat Jelek | <ul style="list-style-type: none"> Pilihan jawaban tidak logis kecuali c,d dan e Jawaban mudah di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Dibuang karna memiliki fungsi yang terbalik |
| 25 | 4 | 4 | 0 | 0 | Sukar | Jelek | <ul style="list-style-type: none"> Pilihan jawaban logis kecuali a dan b Jawaban sulit di prediksi Soal sangat sukar untuk mayoritas siswa | Dibuang Revisi mengurangi kesulitan soal agar masuk dalam kategori cukup |
| 26 | 11 | 3 | 8 | 72,73 | Sedang | Baik Sekali | <ul style="list-style-type: none"> Jumlah pilihan jawaban hanya 4 Pilihan jawaban e dan c memiliki posisi yang “salah” yang | Disimpan di bank soal |

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Tafsir | Keterangan Arikunto, (2016:232) | Faktor | Tindakan |
|----------|-----------|------------|------|---------------|--------------|---------------------------------|--|---|
| | | | | | | | <ul style="list-style-type: none"> mengakibatkan siswa dapat terjerumus dalam menjawab Jawaban sulit di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | |
| 27 | 10 | 9 | 1 | 9,09 | Sangat Mudah | Jelek | <ul style="list-style-type: none"> Jawaban terlalu mencolok Pilihan jawaban homogen (.. tool) Jawaban mudah di prediksi Faktor jawaban siswa Soal sangat mudah untuk dijawab mayoritas siswa | Dibuang karna sangat mudah untuk siswa Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 28 | 11 | 11 | 0 | 0 | Sangat Mudah | Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. color) Karna tidak sehubungan dengan soal maka apapun jawabannya dianggap benar / bonus Jawaban mudah di prediksi | Dibuang karna sangat mudah untuk siswa Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 29 | 11 | 6 | 5 | 45,45 | Sangat Mudah | Baik | <ul style="list-style-type: none"> Jawaban terlalu mencolok Pilihan jawaban homogen (.. image) Jawaban mudah di prediksi Faktor jawaban siswa Soal sangat mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Dibuang karna sangat mudah untuk siswa Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 30 | 11 | 9 | 2 | 18,18 | Sangat Mudah | Jelek | <ul style="list-style-type: none"> Jawaban terlalu mencolok Pilihan jawaban menggunakan gambar yang secara konseptual yang memiliki fungsi pasti, artinya tidak homogen. Jawaban mudah di prediksi Faktor jawaban siswa Soal sangat mudah untuk dijawab mayoritas siswa | Dibuang karna sangat mudah untuk siswa Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 31 | 4 | 3 | 1 | 9,09 | Sedang | Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. tool) Terdapat dua pilihan jawaban yang sama "lasso tool" (a dan b) dan mayoritas siswa memilih jawaban tersebut Jawaban tidak dapat di prediksi | Dibuang karna tidak sesuai dengan kemampuan siswa Revisi mengubah tipe soal |

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Tafsir | Keterangan Arikunto, (2016:232) | Faktor | Tindakan |
|----------|-----------|------------|------|---------------|--------------|---------------------------------|---|--|
| 32 | 7 | 5 | 2 | 18,18 | Sedang | Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. tool) Jawaban terlalu mencolok Jawaban tidak dapat di prediksi Faktor jawaban siswa | Dibuang Revisi mengubah tipe soal berdasarkan aspek kognitif |
| 33 | 11 | 4 | 7 | 63,64 | Mudah | Baik | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. tool) Jawaban terlalu mencolok Jawaban mudah di prediksi Soal terasa mudah untuk dijawab mayoritas siswa | Disimpan di bank soal Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 34 | 11 | 10 | 1 | 9,09 | Sangat Mudah | Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. tool) Jawaban terlalu mencolok Jawaban mudah di prediksi Faktor jawaban siswa Soal sangat mudah untuk dijawab mayoritas siswa | Dibuang karna sangat mudah untuk siswa Revisi meningkatkan kesulitan soal agar masuk dalam kategori cukup |
| 35 | 8 | 6 | 2 | 18,18 | Sedang | Jelek | <ul style="list-style-type: none"> Jawaban tidak dapat di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Dibuang Revisi mengubah tipe soal berdasarkan aspek kognitif |
| 36 | 3 | 7 | -4 | -36,36 | Sedang | Sangat Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (..tool) Jawaban tidak dapat di prediksi Faktor jawaban siswa Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Dibuang karna memiliki fungsi yang terbalik |
| 37 | 9 | 5 | 4 | 36,36 | Sedang | Cukup | <ul style="list-style-type: none"> Pilihan jawaban homogen (tool..) Jawaban tidak dapat di prediksi Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Disimpan di bank soal |
| 38 | 3 | 11 | -8 | -72,73 | Sedang | Sangat Jelek | <ul style="list-style-type: none"> Pilihan jawaban homogen (.. tool) Jawaban tidak dapat di prediksi Faktor jawaban siswa Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Dibuang karna memiliki fungsi yang terbalik |

| No. Soal | Kel. atas | Kel. bawah | Beda | Indeks DP (%) | Tafsir | Keterangan Arikunto, (2016:232) | Faktor | Tindakan |
|----------|-----------|------------|------|---------------|--------|---------------------------------|--|---|
| 39 | 1 | 2 | -1 | -9,09 | Sukar | Sangat Jelek | <ul style="list-style-type: none"> • Pilihan jawaban homogen (.. pallete) • Pilihan jawaban e dan c memiliki posisi yang “tertukar” yang mengakibatkan siswa dapat terjerumus dalam menjawab • Jawaban sulit di prediksi • Soal sangat sukar untuk mayoritas siswa | Dibuang karna memiliki fungsi yang terbalik |
| 40 | 6 | 1 | 5 | 45,45 | Sedang | Baik | <ul style="list-style-type: none"> • Jawaban tidak dapat di prediksi • Tingkat kesulitan tes sesuai terhadap kemampuan siswa | Disimpan di bank soal |

Lampiran 19. Distribusi Soal Berdasarkan Jawaban Benar Salah

| SANGAT BAIK | | | BAIK | | | | | | | | | | CUKUP | | | | | | | | | | TIDAK BAIK | | | | | | | | | | SANGAT TIDAK BAIK | | | | | | | |
|-------------|----|----|------|---|----|----|----|----|----|----|---|---|-------|----|----|----|----|----|----|----|----|----|------------|---|---|----|----|----|----|----|----|----|-------------------|----|---|---|----|----|----|----|
| 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | | | |
| 8 | 11 | 40 | 3 | 5 | 13 | 16 | 19 | 21 | 26 | 37 | 1 | 2 | 9 | 12 | 14 | 15 | 18 | 20 | 23 | 24 | 29 | 30 | 33 | 4 | 6 | 10 | 25 | 27 | 31 | 32 | 35 | 36 | 38 | 39 | 4 | 7 | 17 | 22 | 28 | 34 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--|---------------|
| | Jawaban benar |
|--|---------------|

| | |
|--|---------------|
| | Jawaban salah |
|--|---------------|

| | |
|--|------------|
| | Nomor soal |
|--|------------|

Keterangan :

1 sangat baik 2 baik 3 cukup 4 tidak baik 5 sangat tidak baik

| | Jawaban benar | Jawaban salah | Nomor soal |
|--|---------------|---------------|------------|
|--|---------------|---------------|------------|

1 sangat baik 2 baik 3 cukup 4 tidak baik 5 sangat tidak baik

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 27 | |
| 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 30 | | |
| 3 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 29 | | |
| 4 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 24 | | |
| 5 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 23 | | | |
| 6 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 21 | | |
| 7 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 21 | | |
| 8 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 24 | | |
| 9 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 24 | | |
| 10 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 23 | | |
| 11 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 29 | | |
| 12 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 21 | | |
| 13 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 21 | | |
| 14 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 21 | |
| 15 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 18 | |
| 16 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 21 | | |
| 17 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 21 | |
| 18 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 23 | | |
| 19 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 25 | | |
| 20 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 22 | |
| 21 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 25 | | |
| 22 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 26 | |
| 23 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 26 | | |
| 24 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 22 |
| 25 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 25 | | |
| 26 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 29 | | |
| 27 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 29 | |
| 28 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 29 | | |
| 29 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 31 | |
| 30 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 25 | |
| 31 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 27 | |
| 32 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 25 | |
| 33 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 29 | |
| 34 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 18 |
| 35 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 30 |
| 36 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 30 | |
| 37 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 29 | |
| 38 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 29 | |
| 39 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 29 |
| 40 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 15 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | | |
| | 3 | 3 | 2 | 2 | 5 | 2 | 4 | 5 | 1 | 3 | 4 | 1 | 3 | 2 | 3 | 3 | 2 | 5 | 3 | 2 | 3 | 2 | 5 | 3 | 3 | 4 | 2 | 4 | 5 | 3 | 3 | 4 | 4 | 3 | 5 | 4 | 4 | 2 | 4 | 4 | 1 | |

☐ Jawaban benar
 ☐ Jawaban salah
 ☐ Nomor soal
 ☐ Skor
 ☐ Subjek

Keterangan :

1 sangat baik 2 baik 3 cukup 4 tidak baik 5 sangat tidak baik

Lampiran 20. Distribusi Jawaban Biserial Berdasarkan Tingkat Kesukaran

[illegible]

Lampiran 21. Distribusi Jawaban Siswa

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | D | E | C | A | e | B | A | B | A | c | d | D | C | B | A | E | C | B | C | A | b | c | d | e | b | B | C | c | D | D | A | a | b | A | c | D | c | B | E | d | 27 | |
| 2 | D | E | C | A | d | B | A | B | A | c | d | D | C | B | A | E | C | B | C | A | a | B | c | d | b | B | C | c | D | D | A | a | D | A | c | D | c | B | E | d | 30 | |
| 3 | D | E | C | A | a | B | A | B | A | c | B | D | C | B | A | E | C | B | C | A | a | a | a | A | b | B | C | c | D | D | A | a | D | A | a | D | c | B | a | d | 29 | |
| 4 | D | E | C | A | a | d | c | c | A | c | B | D | a | c | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | E | 24 | |
| 5 | D | E | C | A | a | d | c | B | d | e | e | D | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | d | 23 | |
| 6 | b | a | C | A | d | B | A | c | A | a | B | a | C | a | A | d | C | B | a | A | a | d | e | A | D | d | C | c | a | D | b | a | b | A | B | D | E | B | d | a | 21 | |
| 7 | b | a | C | A | d | B | A | c | A | a | B | a | C | a | A | d | C | B | a | A | a | d | e | A | D | d | C | c | a | D | b | a | b | A | B | D | E | B | d | a | 21 | |
| 8 | D | E | d | A | a | B | c | B | A | e | e | D | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | d | 24 | |
| 9 | D | E | d | A | a | B | c | B | A | e | e | D | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | d | 24 | |
| 10 | D | E | d | A | a | a | d | c | A | D | B | e | a | B | b | E | C | B | b | d | d | d | C | A | e | B | C | a | D | D | b | B | D | A | d | D | c | B | c | E | 23 | |
| 11 | D | E | d | A | a | B | A | c | A | c | B | D | C | c | A | E | C | B | C | A | d | d | e | C | A | b | B | C | a | D | D | A | B | D | A | a | D | E | B | d | d | 29 |
| 12 | c | E | C | A | a | d | c | d | d | e | e | D | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | d | 21 | |
| 13 | b | a | C | A | d | B | A | c | A | a | B | a | C | a | A | d | C | B | a | A | a | d | e | A | D | d | C | c | a | D | b | a | b | A | B | D | E | B | d | a | 21 | |
| 14 | b | a | C | A | d | B | A | c | A | a | B | a | C | a | A | d | C | B | a | A | a | d | e | A | D | d | C | c | a | D | b | a | b | A | B | D | E | B | d | a | 21 | |
| 15 | D | E | d | A | d | B | A | e | A | b | a | D | a | e | b | a | C | e | b | d | b | d | C | A | c | B | b | a | D | D | c | c | c | A | B | E | B | d | b | 18 | | |
| 16 | D | E | d | A | B | c | d | e | b | e | B | D | a | B | b | b | C | B | b | A | d | a | b | A | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | d | 21 | |
| 17 | D | E | d | b | a | B | c | d | b | e | e | D | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | d | 21 | |
| 18 | c | E | C | A | a | d | c | B | d | c | B | D | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | d | 23 | |
| 19 | D | E | C | A | a | d | c | B | d | c | B | D | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | a | D | b | B | c | E | 25 | |
| 20 | D | E | d | A | a | B | c | c | A | e | e | e | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | e | A | B | D | A | B | c | b | c | E | E | 22 |
| 21 | D | E | C | A | a | B | c | B | A | e | e | e | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | B | c | E | e | E | d | 25 | |
| 22 | D | E | C | A | a | B | c | B | d | c | B | e | a | B | A | E | C | B | b | A | d | a | C | b | e | e | C | a | D | D | A | B | D | A | B | c | E | e | E | E | 26 | |
| 23 | c | E | C | A | B | B | c | B | b | c | B | e | a | B | A | E | d | B | b | c | E | d | C | A | e | B | C | c | D | D | c | | D | A | B | D | E | B | E | c | 26 | |
| 24 | D | b | d | A | B | B | c | B | A | c | a | e | a | B | A | a | C | B | b | c | E | d | C | A | e | B | C | c | D | a | c | B | b | A | B | e | d | B | E | c | 22 | |
| 25 | D | E | d | A | B | B | c | B | b | c | B | a | C | B | b | E | C | B | | A | E | d | C | c | c | B | C | c | D | D | c | c | D | A | B | e | E | e | a | E | 25 | |
| 26 | D | E | C | A | B | d | c | B | A | a | B | D | d | B | A | E | C | B | C | A | E | d | C | e | D | B | C | c | D | D | b | c | D | A | B | e | E | e | a | E | 29 | |
| 27 | D | E | C | A | B | d | c | B | A | D | B | D | d | B | c | E | C | B | C | A | E | d | C | d | D | B | C | c | D | D | b | c | D | A | B | e | E | e | a | E | 29 | |
| 28 | D | E | C | A | B | d | c | B | A | c | B | D | C | B | b | E | C | B | C | A | E | | C | e | c | B | C | c | D | D | c | B | D | A | B | e | E | e | a | E | 29 | |
| 29 | D | E | C | A | B | d | c | B | A | D | B | D | e | B | A | E | C | B | C | A | E | d | C | d | b | B | C | e | D | D | A | B | D | A | B | e | E | e | a | E | 31 | |
| 30 | D | E | d | A | B | B | c | B | b | a | B | a | C | B | b | E | C | B | | A | E | d | C | A | a | B | | c | D | D | d | c | D | A | B | e | E | e | E | c | 25 | |
| 31 | D | E | C | A | B | d | c | B | A | b | c | D | b | B | b | E | C | B | C | A | E | c | C | c | c | B | C | c | D | D | A | a | D | A | B | e | E | e | a | E | 27 | |
| 32 | D | E | d | A | B | d | c | B | A | a | e | D | e | B | c | E | C | a | C | A | E | a | C | A | D | B | b | c | D | D | b | c | D | A | B | e | E | e | a | E | 25 | |
| 33 | D | E | C | A | B | d | c | B | A | D | B | D | b | B | b | E | C | B | C | A | E | d | C | e | c | B | C | c | D | D | c | B | D | A | B | e | E | e | a | E | 29 | |
| 34 | D | E | d | A | d | e | c | a | A | D | B | D | b | a | A | b | C | a | a | A | d | B | C | b | a | e | C | e | a | D | b | B | c | d | e | b | a | B | d | E | 18 | |
| 35 | D | E | C | A | B | B | c | B | A | D | B | D | C | B | b | E | C | B | C | A | E | d | C | c | D | B | a | c | D | D | c | B | D | A | B | e | E | e | a | c | 30 | |
| 36 | D | E | C | A | B | B | c | B | A | e | B | D | C | B | b | E | C | B | C | A | E | d | C | e | D | B | C | c | D | D | c | B | D | A | B | e | E | e | a | c | 30 | |
| 37 | D | E | C | A | B | d | c | B | A | c | B | D | C | B | b | E | C | B | C | A | E | d | C | e | c | B | C | c | D | D | c | B | D | A | B | e | E | e | a | E | 29 | |
| 38 | D | E | C | A | B | d | c | B | A | c | B | D | C | B | d | E | C | B | C | A | E | d | C | e | c | B | C | c | D | D | c | B | D | A | B | e | E | e | a | E | 29 | |
| 39 | D | E | C | A | B | d | c | B | A | a | B | D | d | B | A | E | C | B | C | A | E | d | C | e | D | B | C | c | D | D | b | c | D | A | B | e | E | e | a | E | 29 | |
| 40 | D | E | C | A | B | d | d | c | c | e | a | D | b | d | d | a | C | a | d | b | E | c | a | b | e | B | e | e | D | D | b | b | c | D | A | a | e | c | B | E | d | 15 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | | |
| | 3 | 2 | 3 | 2 | 5 | 2 | 4 | 5 | 1 | 3 | 4 | 1 | 3 | 2 | 3 | 3 | 2 | 5 | 3 | 2 | 3 | 2 | 5 | 3 | 4 | 2 | 4 | 3 | 4 | 3 | 4 | 3 | 5 | 4 | 4 | 2 | 4 | 4 | 1 | | | |

☐ Jawaban benar
 ☐ Jawaban salah
 ☐ Nomor soal
 ☐ Skor
 ☐ Subjek

Keterangan :

1 sangat baik
 2 baik
 3 cukup
 4 tidak baik
 5 sangat tidak baik

Lampiran 22. Surat Keputusan Penunjukan Dosen Pembimbing

**KEPUTUSAN DEKAN FAKULTAS TEKNIK
UNIVERSITAS NEGERI YOGYAKARTA
NOMOR : 171/PIN/FPB/VIII/2018**

**TENTANG
PENGANGKATAN DOSEN PEMBIMBING TUGAS AKHIR SKRIPSI (TAS) MAHASISWA
FAKULTAS TEKNIK UNIVERSITAS NEGERI YOGYAKARTA**

DEKAN FAKULTAS TEKNIK UNIVERSITAS NEGERI YOGYAKARTA

- Menimbang :**
- a. bahwa untuk kelancaran pelaksanaan kegiatan Tugas Akhir Skripsi (TAS) mahasiswa, dipandang perlu mengangkat dosen pembimbingnya;
 - b. bahwa untuk keperluan sebagaimana dimaksud pada huruf a perlu menetapkan Keputusan Dekan Tentang Pengangkatan Dosen Pembimbing Tugas Akhir Skripsi (TAS) Fakultas Teknik Universitas Negeri Yogyakarta.
- Mengingat :**
1. Undang-undang RI Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional (Lembaran Negara Tahun 2003 Nomor 78, Tambahan Lembaran Negara Nomor 4301);
 2. Peraturan Pemerintah Republik Indonesia Nomor 4 Tahun 2014 Tentang Penyelenggaraan Pendidikan Tinggi dan Pengelolaan Perguruan Tinggi (Lembaran Negara Tahun 2014 Nomor 16, Tambahan Lembaran Negara Republik Indonesia Nomor 5500);
 3. Keputusan Presiden Republik Indonesia Nomor 93 Tahun 1999 Tentang Perubahan Institut Keguruan dan Ilmu Pendidikan menjadi Universitas;
 4. Peraturan Mendiknas RI Nomor 23 Tahun 2011 Tentang Organisasi dan Tata Kerja Universitas Negeri Yogyakarta;
 5. Peraturan Mendiknas RI Nomor 34 Tahun 2011 Tentang Statuta Universitas Negeri Yogyakarta;
 6. Keputusan Menteri Pendidikan dan Kebudayaan RI Nomor 98/MPK.A/4/KP/2013 Tentang Pengangkatan Rektor Universitas Negeri Yogyakarta;
 7. Peraturan Rektor Nomor 2 Tahun 2014 tentang Peraturan Akademik;
 8. Keputusan Rektor Nomor 800/UN.24/KP/2016 tahun 2016 tentang Pengangkatan Dekan Fakultas Teknik Universitas Negeri Yogyakarta.

MEMUTUSKAN

Menetapkan : **KEPUTUSAN DEKAN TENTANG PENGANGKATAN DOSEN PEMBIMBING TUGAS AKHIR SKRIPSI (TAS) FAKULTAS TEKNIK UNIVERSITAS NEGERI YOGYAKARTA.**

PERTAMA : Mengangkat Saudara :

| | |
|------------------|-------------------------|
| Nama | : Dr. Priyanto, M.Kom. |
| NIP | : 19620625 198503 1 002 |
| Pangkat/Golongan | : Penata Tk.I, III/d |
| Jabatan Akademik | : Lektor |

sebagai Dosen Pembimbing Untuk mahasiswa penyusun Tugas Akhir Skripsi (TAS) :

| | |
|------------------|---|
| Nama | : Yuda Prasetya Anggara |
| NIM | : 14520241030 |
| Predik Studi | : Pend. Teknik Informatika - SI |
| Judul Skripsi/TA | : ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP MATA PELAJARAN DASAR DESAIN GRAFIS KELAS X MULTIMEDIA DI SMK MUHAMMADIYAH 1 BAMBANGLUPURO TAHUN AJARAN 2017/2018. |

- KEDUA : Dosen Pembimbing sebagaimana dimaksud dalam Diktum PERTAMA bertugas merencanakan, mempersiapkan, melaksanakan, dan menperiangjawabkan pelaksanaan kegiatan bimbingan terhadap mahasiswa sebagaimana dimaksud dalam Diktum PERTAMA sampai mahasiswa dimaksud dinyatakan lulus.
- KETIGA : Biaya yang diperlukan dengan adanya Keputusan ini dibebankan pada Anggaran DIPA Universitas Negeri Yogyakarta Tahun 2018.
- KEEMPAT : Keputusan ini berlaku sejak tanggal 7 Agustus 2018.

Tembusan Keputusan Dekan ini disampaikan kepada :

1. Para Wakil Dekan Fakultas Teknik;
 2. Kepala Bagian Tata Usaha Fakultas Teknik;
 3. Kepala Subbagian Keuangan dan Akuntansi Fakultas Teknik;
 4. Kepala Subbagian Pendidikan Fakultas Teknik;
 5. Mahasiswa yang bersangkutan;
- Universitas Negeri Yogyakarta.

Ditandatangani di : Yogyakarta
Pada tanggal : 7 Agustus 2018

DEKAN FAKULTAS TEKNIK
UNIVERSITAS NEGERI YOGYAKARTA,



Dr. Drs. WIDARTO, M.Pd.
NIP. 19631230 198812 1 001

Lampiran 23. Surat Ijin Penelitian dari Fakultas Teknik UNY



KEMENTERIAN RISET, TEKNOLOGI, DAN PENDIDIKAN TINGGI
UNIVERSITAS NEGERI YOGYAKARTA
FAKULTAS TEKNIK

Alamat : Kampus Karangmalang, Yogyakarta 55281
Telp. (0274) 566168 psw. 278,289,282 (0274) 566734 Fax. (0274) 566734
Laman: f.uny.ac.id E-mail: ft@uny.ac.id, teknik@uny.ac.id

Nomor : 597/UN34.15/LT/2018
Lamp. : 1 Bendel Proposal
Hal : Izin Penelitian

3 Agustus 2018

Yth. 1. Gubernur Daerah Istimewa Yogyakarta c.q. Kepala Badan Kesatuan Bangsa dan Politik DIY
2. Pimpinan Daerah Muhammadiyah (PDM) Kabupaten Bantul
3. Kepala SMK MUHAMMADIYAH 1 BAMBANGLIPURO

Kami sampaikan dengan hormat, bahwa mahasiswa tersebut di bawah ini:

Nama : Yuda Prasetya Anggara
NIM : 14520241030
Program Studi : Pend. Teknik Informatika - S1
Judul Tugas Akhir : ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP
MATA PELAJARAN DASAR DESAIN GRAFIS KELAS X MULTIMEDIA DI
SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN AJARAN
2017/2018.
Tujuan : Memohon izin mencari data untuk penulisan Tugas Akhir Skripsi (TAS)
Waktu Penelitian : 6 Agustus - 10 September 2018

Untuk dapat terlaksananya maksud tersebut, kami mohon dengan hormat Bapak/Ibu berkenan memberi izin dan bantuan seperluanya.

Demikian atas perhatian dan kerjasamanya kami sampaikan terima kasih.

Dekan Fakultas Teknik

Dr. Hris. Widarto, M.Pd.
NIM: 19631290 198312 1 001

Tembusan :
1. Sub. Bagian Pendidikan dan Kemahasiswaan ;
2. Mahasiswa yang bersangkutan.

Lampiran 24. Surat Rekomendasi Penelitian dari Kesbangpol DIY



PEMERINTAH DAERAH DAERAH ISTIMEWA YOGYAKARTA
BADAN KESATUAN BANGSA DAN POLITIK
Jl. Jenderal Sudirman No 5 Yogyakarta - 55233
Telepon : (0274) 551136, 551275, Fax (0274) 551137

Yogyakarta, 3 Agustus 2018

Kepada Yth. .

Nomor : 0748180/Kesbangpol/2018
Perihal : Rekomendasi Penelitian

Kepala Dinas Pendidikan, Pemuda, dan
Olahraga DIY

di Yogyakarta

Memperhatikan surat :

Dari : Dekan Fakultas Teknik Universitas Negeri Yogyakarta
Nomor : 597/UN34.15A/Tr/2018
Tanggal : 3 Agustus 2018
Perihal : Izin Penelitian

Setelah mempelajari surat permohonan dan proposal yang diajukan, maka dapat diberikan surat rekomendasi tidak keberatan untuk melaksanakan riset/penelitian dalam rangka penyusunan skripsi dengan judul proposal "ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP MATA PELAJARAN DASAR DESAIN GRAFIS KELAS X MULTIMEDIA DI SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN AJARAN 2017/2018" kepada:

Nama : YUDA PRASETYA ANGGARA
NIM : 14520241030
No.HP/Identitas : 08155775277/3404112212960001
Prodi/Jurusan : Pendidikan Teknik Informatika/ Pendidikan Teknik Elektronika dan Informatika

Fakultas : Fakultas Teknik Universitas Negeri Yogyakarta
Lokasi Penelitian : SMK Muhammadiyah 1 Bambanglipuro
Waktu Penelitian : 6 Agustus 2018 s.d 10 September 2018

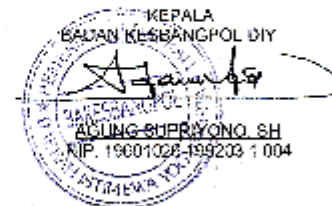
Sehubungan dengan maksud tersebut, diharapkan agar pihak yang terkait dapat memberikan bantuan / fasilitas yang dibutuhkan.

Kepada yang bersangkutan diwajibkan:

1. Menghormati dan menaati peraturan dan tata tertib yang berlaku di wilayah riset/penelitian;
2. Tidak dibenarkan melakukan riset/penelitian yang tidak sesuai atau tidak ada kaitannya dengan judul riset/penelitian dimaksud;
3. Menyerahkan hasil riset/penelitian kepada Badan Kesbangpol DIY selambat-lambatnya 6 bulan setelah penelitian dilaksanakan;
4. Surat rekomendasi ini dapat diperpanjang maksimal 2 (dua) kali dengan menunjukkan surat rekomendasi sebelumnya, paling lambat 7 (tujuh) hari kerja sebelum berakhirnya surat rekomendasi ini.

Rekomendasi Ijin Riset/Penelitian ini dinyatakan tidak berlaku, apabila ternyata pemegang tidak menaati ketentuan tersebut di atas.

Demikian untuk menjabarkan maksud.



Tembusan disampaikan Kepada Yth :

1. Gubernur DIY (sebagai laporan)
2. Dekan Fakultas Teknik Universitas Negeri Yogyakarta;
3. Yang bersangkutan.

Lampiran 25. Surat Rekomendasi Penelitian dari Disdikpora DIY



PEMERINTAH DAERAH DAERAH ISTIMEWA YOGYAKARTA
DINAS PENDIDIKAN, PEMUDA, DAN OLAAHRAHA
Jalan Cendana No. 3 Yogyakarta, Telpun (0274) 541322, Fax, 541322
web : www.dikpora.jogjaprov.go.id, email : dikpora@jogjaprov.go.id, Kode Pos 55166

Yogyakarta, 3 Agustus 2018

Nomor : 070/8796
Lamp : -
Hal : Rekomendasi Penelitian

Kepada Yth.
Kepala SMK Muhammadiyah 1
Bambanglipuro

Dengan hormat, memperhatikan surat dari Badan Kesatuan Bangsa dan Politik Pemerintah Daerah Daerah Istimewa Yogyakarta nomor: 074/8180/Kesbangpol/2018 tanggal 3 Agustus 2018 perihal Rekomendasi Penelitian, kami sampaikan bahwa Dinas Pendidikan, Pemuda, dan Olahraga DIY memberikan ijin rekomendasi penelitian kepada:

Nama : YUDA PRASETYA ANGARA
NIM : 14520241030
Prodi/Jurusan : Pendidikan Teknik Informatika/ Pendidikan Teknik Elektronika dan Informatika
Fakultas : Teknik, Universitas Negeri Yogyakarta
Judul : ANALISIS KUALITAS BUTIR SOAL UJIAN AKHIR SEMESTER GENAP MATA PELAJARAN DESAIN GRAFIS KELAS X MULTIMEDIA DI SMK MUHAMMADIYAH 1 BAMBANGLIPURO TAHUN AJARAN 2017/2018
Lokasi : SMK Muhammadiyah 1 Bambanglipuro
Waktu : 3 Agustus 2018 s.d 10 September 2018

Dengan ketentuan sebagai berikut :

1. Ijin ini hanya dipergunakan untuk keperluan ilmiah, dan pemegang ijin wajib mentaati ketentuan yang berlaku di lokasi penelitian.
2. Ijin yang diberikan dapat dibatalkan sewaktu-waktu apabila pemegang ijin ini tidak memenuhi ketentuan yang berlaku.

Atas perhatian dan kerjasama yang baik, kami menyampaikan terimakasih.

a.n Kepala
Kepala Bidang Perencanaan dan Standarisasi



Didik Wardaya, SE., M.Pd.
NIP 19680533 198802 1 002

Tembusan Yth :
1. Kepala Dinas Dikpora DIY