

# **Lampiran 1**

## **Jadwal Rencana Penelitian**

**RENCANA PENELITIAN**  
**HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI**  
**SMK NEGERI 2 YOGYAKARTA**

| No. | Kegiatan                | Februari   |   |   |   | Maret      |   |   |   | April      |   |   |   | Mei        |   |   |   | Juni       |   |   |   | Juli       |   |   |   |
|-----|-------------------------|------------|---|---|---|------------|---|---|---|------------|---|---|---|------------|---|---|---|------------|---|---|---|------------|---|---|---|
|     |                         | Minggu ke- |   |   |   | Minggu ke- |   |   |   | Minggu ke- |   |   |   | Minggu ke- |   |   |   | Minggu ke- |   |   |   | Minggu ke- |   |   |   |
|     |                         | 1          | 2 | 3 | 4 | 1          | 2 | 3 | 4 | 1          | 2 | 3 | 4 | 1          | 2 | 3 | 4 | 1          | 2 | 3 | 4 | 1          | 2 | 3 | 4 |
| A.  | Observasi               |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 1. Persiapan            |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 2. Pelaksanaan          |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
| B.  | Proposal Penelitian     |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 1. Persiapan            |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 2. Penyusunan proposal  |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 3. Perijinan penelitian |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
| C.  | Pelaksanaan Penelitian  |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 1. Persiapan            |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 2. Pelaksanaan          |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 3. Evaluasi             |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
| D.  | Laporan Skripsi         |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 1. Persiapan            |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 2. Penyusunan laporan   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |
|     | 3. Evaluasi             |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |            |   |   |   |

## **Lampiran 2**

### **Instrumen Penelitian**



## INSTRUMEN PENELITIAN

### HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI SMK NEGERI 2 YOGYAKARTA

RESPONDEN : *Siswa Program Keahlian Teknik Pemesinan*

Nama : .....

Kelas : .....

Jenis Kelamin : Laki-laki/Perempuan \*)

No HP/ Telp : .....

\*) Coret yang tidak perlu



## **Hal : Permohonan Pengisian Angket/Kuesioner**

**Kepada Yth :**

**Siswa Program Keahlian Teknik Pemesinan SMK Negeri 2  
Yogyakarta**

Dengan hormat,

Dalam aktivitas belajar para siswa, perkenankanlah saya mohon pengorbanan waktu, tenaga dan pemikiran para siswa untuk mengisi angket yang telah kami ajukan.

Adapun maksud dari angket ini adalah sebagai suatu sarana untuk memperoleh data dalam rangka melaksanakan uji coba instrumen dan pengambilan data, maka kami berharap sudilah kiranya para siswa mengisi daftar sesuai dengan pemikiran anda sendiri tanpa tekanan dari orang lain.

Dengan memenuhi permohonan kami berarti para siswa telah memberikan sumbangan yang sangat besar dalam kami menyelesaikan laporan skripsi dan juga sebagai informasi perkembangan pendidikan yang ada di sekolah anda.

Atas kerjasama dan bantuannya kami mengucapkan banyak terima kasih.

Yogyakarta,

Hormat saya,

Teguh Budiono

NIM. 08503241017

## PETUNJUK:

Proses pembelajaran dalam kelas akan mendapatkan hasil yang baik jika didukung oleh tenaga pendidik yang berkarakter baik dan fasilitas belajar yang memadai. Berkenaan dengan hal tersebut, dalam rangka penelitian skripsi mengenai **“Hubungan Karakteristik Guru dan Fasilitas Belajar Dengan Kualitas Pembelajaran Siswa Di SMK Negeri 2 Yogyakarta”**, maka dengan hormat anda untuk memberikan masukan, informasi, dan jawaban yang sebenarnya sesuai kondisi di dalam lingkungan sekolah mengenai karakteristik guru dan fasilitas belajar serta kualitas pembelajaran di SMK Negeri 2 Yogyakarta khususnya Program Keahlian Teknik Pemesinan.

Mohon dipilih jawaban yang paling tepat sesuai dengan kondisi sebenarnya terhadap pernyataan-pernyataan berikut ini dengan cara **memberikan tanda centang (√)** kolom pilihan jawaban yang disediakan sesuai dengan fakta yang terjadi.

### BAGIAN I: KARAKTERISTIK GURU

1. Guru berpenampilan rapi saat mengajar  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
2. Guru membantu siswa ketika mengalami kesulitan saat pembelajaran  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
3. Guru peduli dengan keluhan siswa dalam proses pembelajaran dalam kelas  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
4. Guru memberikan selamat kepada siswa yang berprestasi  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |

5. Guru memperbolehkan masuk kelas kepada siswa yang terlambat datang ke sekolah
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
6. Guru menegur siswa yang ramai dalam kelas dengan bahasa yang halus
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
7. Guru disiplin waktu saat memulai dan mengakhiri pelajaran
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
8. Guru mampu membuat siswa untuk lebih bersemangat belajar
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
9. Guru bersikap terbuka (menerima) masukan atau pendapat dari siswa
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
10. Guru melakukan interaksi/ komunikasi dengan siswa saat proses pembelajaran berlangsung
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
11. Guru mengajar dengan penuh tanggung jawab
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
12. Guru menciptakan kondisi belajar yang nyaman
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
13. Guru senang jika ada siswa yang memberi masukan/ pendapat kepadanya
- |                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |

14. Guru sangat bersahabat dengan siswa saat proses pembelajaran di dalam kelas

☐ Selalu

☐ Jarang/ kadang - kadang

☐ Sering

☐ Tidak pernah

15. Guru mengajar dengan penuh kesabaran

☐ Selalu

☐ Jarang/ kadang – kadang

☐ Sering

☐ Tidak pernah

16. Guru bertindak tegas kepada siswa yang melanggar peraturan sekolah

☐ Selalu

☐ Jarang/ kadang - kadang

☐ sering

☐ Tidak pernah

17. Guru percaya diri dalam mengajar

☐ Selalu

☐ Jarang/ kadang - kadang

☐ Sering

☐ Tidak pernah

18. Guru bersikap ramah kepada semua siswa

☐ Selalu

☐ Jarang/ kadang - kadang

☐ Sering

☐ Tidak pernah

19. Guru memberikan contoh bersikap dan bertingkah laku baik di sekolah

☐ Selalu

☐ Jarang/ kadang - kadang

☐ sering

☐ Tidak pernah

20. Guru menerima saran/ kritik dari siswa mengenai cara mengajarnya

☐ Selalu

☐ Jarang/ kadang - kadang

☐ sering

☐ Tidak pernah

Mohon dipilih jawaban yang paling tepat sesuai dengan kondisi sebenarnya terhadap pernyataan-pernyataan berikut ini dengan cara **memberikan tanda centang (√)** kolom pilihan jawaban yang disediakan sesuai dengan fakta yang terjadi.

## BAGIAN II: FASILITAS BELAJAR

1. Alat peraga pembelajaran jumlahnya memadai/ mencukupi, (contoh: papan tulis, LCD)
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
2. Buku-buku pelajaran di perpustakaan jumlahnya memadai/ mencukupi
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
3. Ruang belajar/ kelas jumlahnya memadai/ mencukupi
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
4. Ruang bengkel kerja jumlahnya memadai/ mencukupi
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
5. Alat peraga pembelajaran dapat digunakan dengan baik
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
6. Buku-buku pelajaran di perpustakaan terawat dengan baik
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
7. Ruang kelas nyaman untuk pembelajaran
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
8. Bahan–bahan praktik jumlahnya memadai/ mencukupi
 

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |

9. Alat peraga terawat dengan baik, (contoh: papan tulis, LCD)

☐ Selalu

☐ Kadang-kadang/ jarang

☐ Sering

☐ Tidak pernah

10. Buku – buku pendamping pelajaran memadai, (contoh: LKS, Modul, Soal Latihan)

☐ Sangat setuju

☐ Kurang setuju

☐ setuju

☐ Tidak setuju

11. Meja dan kursi di kelas terawat dengan baik

☐ Selalu

☐ Kadang-kadang/ jarang

☐ Sering

☐ Tidak pernah

12. Ruang laboratorium/ bengkel nyaman untuk praktik

☐ Selalu

☐ Kadang-kadang/ jarang

☐ Sering

☐ Tidak pernah

13. Penggunaan media pembelajaran (contoh: LCD, papan tulis) maksimal oleh guru

☐ Selalu

☐ Kadang-kadang/ jarang

☐ Sering

☐ Tidak pernah

14. Buku-buku di perpustakaan dimanfaatkan secara maksimal oleh siswa

☐ Selalu

☐ Kadang-kadang/ jarang

☐ Sering

☐ Tidak pernah

15. Ruang kelas teratur dan rapi

☐ Selalu

☐ Kadang-kadang/ jarang

☐ Sering

☐ Tidak pernah

16. Bengkel bersih dan rapi

☐ Selalu

☐ Kadang-kadang/ jarang

☐ Sering

☐ Tidak pernah

Mohon dipilih jawaban yang paling tepat sesuai dengan kondisi sebenarnya terhadap pernyataan-pernyataan berikut ini dengan cara **memberikan tanda centang (√)** kolom pilihan jawaban yang disediakan sesuai dengan fakta yang terjadi.

### BAGIAN III: KUALITAS PEMBELAJARAN

1. Guru mengajarkan materi yang sesuai dengan tujuan pembelajaran  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
2. Guru menyapa siswa di kelas dengan bahasa yang baik  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
3. Guru memberikan penilaian sesuai dengan kemampuan siswa  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
4. Guru dapat mengatur siswa yang gaduh di dalam kelas  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
5. Guru memahami materi ajar yang akan disampaikan kepada siswa  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> sering | <input type="checkbox"/> Tidak pernah            |
6. Guru menyampaikan ulang materi ajar yang belum dimengerti siswa  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
7. Guru mengajar dengan metode yang menarik  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang – kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |
8. Guru melakukan evaluasi/ ulangan setiap selesai mengajarkan materi pelajaran  

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Selalu | <input type="checkbox"/> Jarang/ kadang - kadang |
| <input type="checkbox"/> Sering | <input type="checkbox"/> Tidak pernah            |

9. Guru mempersiapkan materi ajar dengan baik

☐ Selalu

☐ Sering

☐ Jarang/ kadang - kadang

☐ Tidak pernah

10. Guru menggunakan banyak buku atau sumber materi dalam mengajar

☐ Selalu

☐ Sering

☐ Jarang/ kadang – kadang

☐ Tidak pernah

11. Guru mengajar dengan metode/ cara yang bervariasi

☐ Selalu

☐ Sering

☐ Jarang/ kadang – kadang

☐ Tidak pernah

12. Guru dapat menggunakan media pembelajaran yang ada dengan baik

☐ Selalu

☐ Sering

☐ Jarang/ kadang - kadang

☐ Tidak pernah

**\*Terima Kasih Atas Kerjasamanya\***



## **Lampiran 3**

### **Validasi Instrumen Oleh Dosen Ahli**

## SURAT PERMOHONAN

Kepada Yth. Syukri Fathudin Aw

Dengan hormat,

Yang bertandatangan di bawah ini, Saya:

Nama : Teguh Budiono

NIM : 08503241017

Program Studi : PENDIDIKAN TEKNIK MESIN

Fakultas : TEKNIK

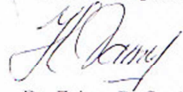
Judul Skripsi : HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS  
BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI  
SMK NEGERI 2 YOGYAKARTA

Sehubungan dengan penyelesaian tugas akhir skripsi maka Saya mohon bantuan Bapak sebagai validator angket. Berikut ini saya sertakan kisi-kisi angket dan instrumen penilaiannya. Atas perhatian dan berkenannya Bapak, Saya ucapkan terima kasih.

Yogyakarta, Juni 2012

Mengetahui,

Pembimbing Skripsi



Dr. Zainur Rofiq, M.Pd.

NIP. 19640203 198812 1 001

Mahasiswa,



Teguh Budiono

NIM. 08503241017

## SURAT PERMOHONAN

Kepada Yth. Edy Purnomo, M.Pd

Dengan hormat,

Yang bertandatangan di bawah ini, Saya:

Nama : Teguh Budiono

NIM : 08503241017

Program Studi : PENDIDIKAN TEKNIK MESIN

Fakultas : TEKNIK

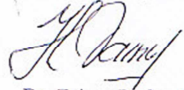
Judul Skripsi : HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS  
BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI  
SMK NEGERI 2 YOGYAKARTA

Sehubungan dengan penyelesaian tugas akhir skripsi maka Saya mohon bantuan Bapak sebagai validator angket. Berikut ini saya sertakan kisi-kisi angket dan instrumen penilaiannya. Atas perhatian dan berkenannya Bapak, Saya ucapkan terima kasih.

Yogyakarta, Juni 2012

Mengetahui,

Pembimbing Skripsi



Dr. Zainur Rofiq, M.Pd.

NIP. 19640203 198812 1 001

Mahasiswa,



Teguh Budiono

NIM. 08503241017

## SURAT PERMOHONAN

Kepada Yth. Dr. Sudji Munadi, M.Pd

Dengan hormat,

Yang bertandatangan di bawah ini, Saya:

Nama : Teguh Budiono

NIM : 08503241017

Program Studi : PENDIDIKAN TEKNIK MESIN

Fakultas : TEKNIK

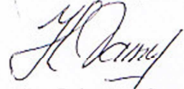
Judul Skripsi : HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS  
BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI  
SMK NEGERI 2 YOGYAKARTA

Sehubungan dengan penyelesaian tugas akhir skripsi maka Saya mohon bantuan Bapak sebagai validator angket. Berikut ini saya sertakan kisi-kisi angket dan instrumen penilaiannya. Atas perhatian dan berkenannya Bapak, Saya ucapkan terima kasih.

Yogyakarta, Juni 2012

Mengetahui,

Pembimbing Skripsi



Dr. Zainur Rofiq, M.Pd.

NIP. 19640203 198812 1 001

Mahasiswa,



Teguh Budiono

NIM. 08503241017

## SURAT PERMOHONAN

Kepada Yth. : Dr. Wagiran

Dengan hormat,

Yang bertandatangan di bawah ini, Saya:

Nama : Teguh Budiono

NIM : 08503241017

Program Studi : PENDIDIKAN TEKNIK MESIN

Fakultas : TEKNIK

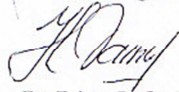
Judul Skripsi : HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS  
BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI  
SMK NEGERI 2 YOGYAKARTA

Sehubungan dengan penyelesaian tugas akhir skripsi maka Saya mohon bantuan Bapak sebagai validator angket. Berikut ini saya sertakan kisi-kisi angket dan instrumen penilaiannya. Atas perhatian dan berkenannya Bapak, Saya ucapkan terima kasih.

Yogyakarta, Juni 2012

Mengetahui,

Pembimbing Skripsi



Dr. Zainur Rofiq, M.Pd.

NIP. 19640203 198812 1 001

Mahasiswa,



Teguh Budiono

NIM. 08503241017

## SURAT PERMOHONAN

Kepada Yth.Dr. Sudiyatno, ME

Dengan hormat,

Yang bertandatangan di bawah ini, Saya:

Nama : Teguh Budiono

NIM : 08503241017

Program Studi : PENDIDIKAN TEKNIK MESIN

Fakultas : TEKNIK

Judul Skripsi : HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS  
BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI  
SMK NEGERI 2 YOGYAKARTA

Schubungan dengan penyelesaian tugas akhir skripsi maka Saya mohon bantuan Bapak sebagai validator angket. Berikut ini saya sertakan kisi-kisi angket dan instrumen penilaiannya. Atas perhatian dan berkenannya Bapak, Saya ucapkan terima kasih.

Yogyakarta, Juli 2012

Mengetahui,

Pembimbing Skripsi



Dr. Zainur Rofiq, M.Pd.

NIP. 19640203 198812 1 001

Mahasiswa,



Teguh Budiono

NIM. 08503241017

## SURAT REKOMENDASI VALIDASI INSTRUMEN

Setelah memvalidasi "Instrumen Responden dengan judul Hubungan Karakteristik Guru dan Fasilitas Belajar Dengan Kualitas Pembelajaran Siswa Di SMK Negeri 2 Yogyakarta" pada tanggal .....yang disusun oleh:

Nama : Teguh Budiono  
NIM : 08503241017  
Program Studi : PENDIDIKAN TEKNIK MESIN  
Fakultas : TEKNIK

Saya merekomendasikan bahwa instrumen ini (lingkari salah satu):

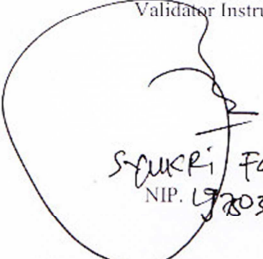
1. Sudah layak untuk penelitian tanpa revisi
2. Sudah layak untuk penelitian namun dengan revisi sesuai saran
3. Belum layak untuk penelitian

Catatan/ saran: ① Tata letak Bagian 1, 2, 3 di rapikan  
② Pindah halaman  
③ Instrumen dapat digunakan.

Harapan Saya, validasi dan catatan yang Saya berikan dapat digunakan sebagaimana mestinya untuk penelitian tugas akhir skripsi mahasiswa yang bersangkutan.

Yogyakarta, 8 Juni 2012

Validator Instrumen

  
SUKRI FATHURRAHMAN  
NIP. 19720312 200212 1 001

### SURAT REKOMENDASI VALIDASI INSTRUMEN

Setelah memvalidasi "Instrumen Responden dengan judul Hubungan Karakteristik Guru dan Fasilitas Belajar Dengan Kualitas Pembelajaran Siswa Di SMK Negeri 2 Yogyakarta" pada tanggal 14 Juni 2012 yang disusun oleh:

Nama : Teguh Budiono  
NIM : 08503241017  
Program Studi : PENDIDIKAN TEKNIK MESIN  
Fakultas : TEKNIK

Saya merekomendasikan bahwa instrumen ini (lingkari salah satu):

1. Sudah layak untuk penelitian tanpa revisi
- ② Sudah layak untuk penelitian namun dengan revisi sesuai saran
3. Belum layak untuk penelitian

Catatan/ saran: 1. Berikan redaksi dan tanda baca.  
2. Setelah direvisi dapat langsung digunakan.

Harapan Saya, validasi dan catatan yang Saya berikan dapat digunakan sebagaimana mestinya untuk penelitian tugas akhir skripsi mahasiswa yang bersangkutan.

Yogyakarta, 14 Juni 2012

Validator Instrumen

  
Eby Purnomo, MPA  
NIP. 19611127 199002 1001



### SURAT REKOMENDASI VALIDASI INSTRUMEN

Setelah memvalidasi "Instrumen Responden dengan judul Hubungan Karakteristik Guru dan Fasilitas Belajar Dengan Kualitas Pembelajaran Siswa Di SMK Negeri 2 Yogyakarta" pada tanggal .....yang disusun oleh:

Nama : Teguh Budiono  
NIM : 08503241017  
Program Studi : PENDIDIKAN TEKNIK MESIN  
Fakultas : TEKNIK

Saya merekomendasikan bahwa instrumen ini (lingkari salah satu):

1. Sudah layak untuk penelitian tanpa revisi
2. Sudah layak untuk penelitian namun dengan revisi sesuai saran
3. Belum layak untuk penelitian

Catatan/ saran:

1. *Revisi instrumen: ditambahkan untuk penelitian*  
2. *Perubahan redaksi: bag. teknik*

Harapan Saya, validasi dan catatan yang Saya berikan dapat digunakan sebagaimana mestinya untuk penelitian tugas akhir skripsi mahasiswa yang bersangkutan.

Yogyakarta, Juni 2012

Validator Instrumen



Dr. Sudji Munadi, M.Pd.

NIP. 19530310 197803 1 003

## SURAT REKOMENDASI VALIDASI INSTRUMEN

Setelah memvalidasi "Instrumen Responden dengan judul Hubungan Karakteristik Guru dan Fasilitas Belajar Dengan Kualitas Pembelajaran Siswa Di SMK Negeri 2 Yogyakarta" pada tanggal .....yang disusun oleh:

Nama : Teguh Budiono  
NIM : 08503241017  
Program Studi : PENDIDIKAN TEKNIK MESIN  
Fakultas : TEKNIK

Saya merekomendasikan bahwa instrumen ini (lingkari salah satu):

1. Sudah layak untuk penelitian tanpa revisi
2. Sudah layak untuk penelitian namun dengan revisi sesuai saran
3. Belum layak untuk penelitian

Catatan/ saran: *- Mohon dipertimbangkan kekurangan pikirnya.*  
*- cek apakah sama antara kualitas pembelajaran*  
*dan kompetensi*  
*- Pastikan keakuratan data bahasan siswa.*

Harapan Saya, validasi dan catatan yang Saya berikan dapat digunakan sebagaimana mestinya untuk penelitian tugas akhir skripsi mahasiswa yang bersangkutan.

Yogyakarta, Juni 2012

Validator Instrumen



Wajaran,

NIP. 19750627 2001121001

### SURAT REKOMENDASI VALIDASI INSTRUMEN

Setelah memvalidasi "Instrumen Responden dengan judul Hubungan Karakteristik Guru dan Fasilitas Belajar Dengan Kualitas Pembelajaran Siswa Di SMK Negeri 2 Yogyakarta" pada tanggal 20/7-2012 yang disusun oleh:

Nama : Teguh Budiono  
NIM : 08503241017  
Program Studi : PENDIDIKAN TEKNIK MESIN  
Fakultas : TEKNIK

Catatan/ saran: .....

1. Masih terdapat butir pertanyaan yg sama, perlu dibuat butir yg lain.
2. Perhatikan istilah-istilah yg lebih tepat.

Harapan Saya, validasi dan catatan yang Saya berikan dapat digunakan sebagaimana mestinya untuk penelitian tugas akhir skripsi mahasiswa yang bersangkutan.

Yogyakarta, 20 Juli 2012

Validator Instrumen



Dr. Sudiyatno, ME

NIP. 19650906 199001 1 001

## **Lampiran 4**

### **Data Hasil Uji Coba Penelitian**

### DATA UJI COBA INSTRUMEN KARAKTERISTIK GURU

| NO     | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | $\Sigma$ |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----------|
| 1      | 2  | 1  | 3  | 2  | 3  | 4  | 2  | 4  | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 48       |
| 2      | 3  | 3  | 2  | 3  | 3  | 2  | 3  | 2  | 3  | 2  | 3  | 4  | 3  | 3  | 2  | 4  | 3  | 3  | 3  | 3  | 57       |
| 3      | 4  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 2  | 3  | 4  | 4  | 3  | 3  | 4  | 60       |
| 4      | 4  | 4  | 3  | 4  | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 3  | 4  | 3  | 2  | 4  | 4  | 2  | 4  | 4  | 71       |
| 5      | 3  | 3  | 2  | 3  | 4  | 1  | 4  | 2  | 2  | 2  | 3  | 2  | 4  | 1  | 3  | 4  | 3  | 3  | 4  | 2  | 55       |
| 6      | 3  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 3  | 2  | 2  | 3  | 3  | 2  | 2  | 49       |
| 7      | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 3  | 3  | 4  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 53       |
| 8      | 2  | 4  | 2  | 4  | 2  | 2  | 2  | 2  | 2  | 3  | 4  | 2  | 4  | 4  | 2  | 4  | 4  | 2  | 2  | 4  | 57       |
| 9      | 3  | 3  | 4  | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 1  | 2  | 3  | 2  | 46       |
| 10     | 4  | 4  | 2  | 3  | 2  | 3  | 4  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 4  | 4  | 4  | 4  | 2  | 65       |
| 11     | 4  | 4  | 3  | 4  | 3  | 2  | 2  | 4  | 4  | 4  | 4  | 4  | 3  | 3  | 3  | 4  | 3  | 3  | 4  | 3  | 68       |
| 12     | 4  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 2  | 4  | 2  | 2  | 3  | 2  | 50       |
| 13     | 3  | 4  | 3  | 3  | 1  | 2  | 2  | 2  | 2  | 4  | 3  | 3  | 2  | 3  | 2  | 4  | 3  | 2  | 4  | 2  | 54       |
| 14     | 3  | 3  | 2  | 3  | 2  | 3  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 50       |
| 15     | 4  | 3  | 3  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 4  | 2  | 4  | 2  | 2  | 4  | 2  | 4  | 3  | 2  | 57       |
| 16     | 3  | 3  | 2  | 2  | 2  | 3  | 3  | 3  | 2  | 3  | 3  | 3  | 4  | 3  | 1  | 4  | 3  | 2  | 3  | 4  | 56       |
| 17     | 2  | 2  | 2  | 3  | 2  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 3  | 3  | 2  | 3  | 3  | 54       |
| 18     | 2  | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 43       |
| 19     | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 2  | 58       |
| 20     | 3  | 3  | 1  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 3  | 2  | 3  | 46       |
| 21     | 4  | 4  | 2  | 2  | 3  | 2  | 3  | 2  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 4  | 2  | 3  | 2  | 52       |
| 22     | 4  | 1  | 3  | 3  | 2  | 2  | 3  | 3  | 2  | 4  | 3  | 2  | 2  | 2  | 2  | 4  | 4  | 2  | 3  | 2  | 53       |
| 23     | 4  | 3  | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 4  | 3  | 3  | 2  | 3  | 2  | 4  | 3  | 2  | 3  | 2  | 54       |
| 24     | 3  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 4  | 3  | 3  | 2  | 2  | 3  | 4  | 2  | 1  | 2  | 3  | 2  | 51       |
| 25     | 3  | 4  | 3  | 3  | 2  | 2  | 3  | 4  | 3  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 62       |
| 26     | 4  | 3  | 3  | 2  | 3  | 3  | 4  | 3  | 2  | 3  | 4  | 1  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 52       |
| 27     | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 3  | 3  | 2  | 3  | 3  | 3  | 3  | 3  | 52       |
| 28     | 4  | 3  | 2  | 3  | 4  | 2  | 3  | 2  | 2  | 3  | 3  | 3  | 4  | 2  | 2  | 3  | 3  | 2  | 2  | 3  | 55       |
| 29     | 3  | 4  | 2  | 3  | 2  | 3  | 3  | 2  | 3  | 3  | 3  | 2  | 2  | 3  | 3  | 3  | 1  | 3  | 3  | 3  | 54       |
| 30     | 4  | 3  | 3  | 3  | 2  | 3  | 3  | 2  | 2  | 4  | 4  | 3  | 3  | 2  | 4  | 3  | 4  | 4  | 4  | 4  | 64       |
| Jumlah | 96 | 87 | 74 | 81 | 77 | 73 | 81 | 80 | 78 | 94 | 93 | 75 | 81 | 77 | 71 | 97 | 87 | 77 | 88 | 79 | 1646     |

### DATA UJI COBA FASILITAS BELAJAR

| No     | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | $\Sigma$ |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----------|
| 1      | 3  | 4  | 3  | 3  | 4  | 2  | 3  | 4  | 2  | 3  | 2  | 3  | 2  | 3  | 3  | 4  | 48       |
| 2      | 2  | 1  | 2  | 2  | 1  | 2  | 2  | 2  | 1  | 3  | 2  | 2  | 2  | 2  | 3  | 2  | 31       |
| 3      | 2  | 2  | 2  | 2  | 1  | 2  | 3  | 3  | 2  | 3  | 2  | 2  | 3  | 2  | 2  | 2  | 35       |
| 4      | 2  | 3  | 3  | 1  | 3  | 2  | 2  | 4  | 1  | 2  | 1  | 2  | 2  | 2  | 1  | 2  | 33       |
| 5      | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 4  | 2  | 3  | 2  | 2  | 2  | 3  | 38       |
| 6      | 4  | 3  | 4  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 2  | 3  | 2  | 50       |
| 7      | 2  | 3  | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 37       |
| 8      | 3  | 3  | 3  | 2  | 3  | 2  | 3  | 3  | 2  | 3  | 2  | 3  | 4  | 2  | 2  | 2  | 42       |
| 9      | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 3  | 4  | 4  | 3  | 3  | 45       |
| 10     | 3  | 3  | 3  | 1  | 2  | 3  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 39       |
| 11     | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 4  | 2  | 2  | 3  | 3  | 3  | 2  | 3  | 3  | 40       |
| 12     | 2  | 3  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 36       |
| 13     | 2  | 3  | 3  | 3  | 2  | 3  | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 38       |
| 14     | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 2  | 3  | 3  | 3  | 3  | 3  | 2  | 2  | 3  | 42       |
| 15     | 3  | 3  | 3  | 3  | 4  | 3  | 2  | 3  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 4  | 45       |
| 16     | 3  | 3  | 3  | 4  | 2  | 3  | 2  | 3  | 2  | 3  | 2  | 3  | 4  | 3  | 2  | 3  | 45       |
| 17     | 3  | 3  | 3  | 3  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 4  | 2  | 2  | 2  | 3  | 41       |
| 18     | 3  | 3  | 4  | 1  | 2  | 3  | 3  | 3  | 2  | 3  | 3  | 3  | 2  | 2  | 3  | 2  | 42       |
| 19     | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 34       |
| 20     | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 3  | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 3  | 37       |
| 21     | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 4  | 4  | 3  | 3  | 4  | 3  | 4  | 4  | 4  | 53       |
| 22     | 4  | 3  | 3  | 3  | 2  | 3  | 2  | 3  | 2  | 2  | 2  | 4  | 4  | 2  | 3  | 2  | 44       |
| 23     | 3  | 2  | 3  | 2  | 4  | 2  | 4  | 3  | 2  | 3  | 3  | 3  | 2  | 3  | 2  | 3  | 44       |
| 24     | 2  | 2  | 2  | 3  | 2  | 4  | 2  | 3  | 2  | 4  | 1  | 3  | 4  | 2  | 2  | 4  | 42       |
| 25     | 2  | 3  | 3  | 3  | 3  | 2  | 2  | 3  | 2  | 3  | 2  | 3  | 2  | 2  | 3  | 3  | 41       |
| 26     | 4  | 3  | 3  | 4  | 2  | 3  | 2  | 2  | 4  | 2  | 3  | 2  | 1  | 2  | 3  | 2  | 42       |
| 27     | 4  | 2  | 4  | 3  | 4  | 3  | 3  | 4  | 3  | 2  | 2  | 4  | 2  | 3  | 3  | 2  | 48       |
| 28     | 3  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 3  | 2  | 2  | 2  | 35       |
| 29     | 3  | 3  | 3  | 2  | 3  | 1  | 3  | 3  | 3  | 2  | 2  | 3  | 3  | 2  | 2  | 2  | 40       |
| 30     | 2  | 2  | 2  | 1  | 2  | 1  | 1  | 1  | 1  | 3  | 1  | 1  | 2  | 2  | 2  | 3  | 27       |
| Jumlah | 81 | 81 | 82 | 73 | 73 | 76 | 68 | 86 | 65 | 83 | 66 | 82 | 78 | 69 | 73 | 78 | 1214     |

# DATA UJI COBA KUALITAS PEMBELAJARAN

| No     | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | $\Sigma$ |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----------|
| 1      | 4  | 4  | 1  | 2  | 1  | 2  | 2  | 3  | 2  | 3  | 3  | 3  | 30       |
| 2      | 1  | 3  | 1  | 2  | 2  | 4  | 1  | 2  | 2  | 2  | 2  | 2  | 24       |
| 3      | 4  | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 36       |
| 4      | 3  | 3  | 4  | 3  | 3  | 4  | 4  | 4  | 4  | 4  | 4  | 3  | 43       |
| 5      | 4  | 3  | 2  | 3  | 4  | 2  | 3  | 3  | 2  | 1  | 2  | 2  | 31       |
| 6      | 3  | 4  | 3  | 2  | 2  | 2  | 4  | 2  | 3  | 2  | 2  | 3  | 32       |
| 7      | 4  | 3  | 4  | 4  | 4  | 1  | 2  | 1  | 3  | 4  | 2  | 2  | 34       |
| 8      | 2  | 2  | 4  | 4  | 3  | 3  | 1  | 2  | 4  | 2  | 2  | 2  | 31       |
| 9      | 3  | 3  | 4  | 2  | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 4  | 31       |
| 10     | 3  | 4  | 4  | 2  | 4  | 2  | 3  | 4  | 2  | 3  | 4  | 2  | 37       |
| 11     | 3  | 4  | 3  | 4  | 4  | 3  | 4  | 4  | 4  | 4  | 2  | 4  | 43       |
| 12     | 3  | 2  | 2  | 3  | 2  | 2  | 1  | 2  | 4  | 2  | 2  | 3  | 28       |
| 13     | 3  | 4  | 2  | 3  | 4  | 2  | 3  | 4  | 4  | 4  | 2  | 2  | 37       |
| 14     | 3  | 3  | 3  | 2  | 3  | 3  | 4  | 3  | 3  | 2  | 2  | 2  | 33       |
| 15     | 3  | 4  | 4  | 2  | 2  | 3  | 2  | 4  | 3  | 2  | 2  | 3  | 34       |
| 16     | 4  | 3  | 4  | 3  | 3  | 3  | 2  | 2  | 3  | 2  | 3  | 3  | 35       |
| 17     | 3  | 3  | 4  | 2  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 34       |
| 18     | 2  | 2  | 3  | 2  | 2  | 3  | 2  | 3  | 3  | 2  | 2  | 2  | 28       |
| 19     | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 2  | 2  | 35       |
| 20     | 3  | 2  | 2  | 3  | 3  | 3  | 3  | 4  | 3  | 2  | 2  | 4  | 34       |
| 21     | 2  | 3  | 4  | 2  | 4  | 3  | 1  | 2  | 3  | 2  | 2  | 2  | 30       |
| 22     | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 2  | 32       |
| 23     | 3  | 4  | 3  | 3  | 4  | 3  | 4  | 4  | 3  | 3  | 2  | 4  | 40       |
| 24     | 3  | 3  | 3  | 2  | 3  | 2  | 2  | 3  | 3  | 3  | 3  | 2  | 32       |
| 25     | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 4  | 3  | 3  | 3  | 39       |
| 26     | 4  | 3  | 4  | 3  | 4  | 3  | 4  | 3  | 3  | 2  | 1  | 3  | 37       |
| 27     | 2  | 2  | 4  | 3  | 3  | 3  | 1  | 3  | 3  | 3  | 3  | 2  | 32       |
| 28     | 2  | 3  | 3  | 2  | 3  | 3  | 4  | 3  | 2  | 2  | 2  | 2  | 31       |
| 29     | 3  | 3  | 2  | 2  | 3  | 3  | 2  | 2  | 4  | 3  | 2  | 3  | 32       |
| 30     | 4  | 4  | 4  | 3  | 3  | 3  | 3  | 2  | 3  | 4  | 3  | 3  | 39       |
| Jumlah | 91 | 94 | 93 | 80 | 91 | 82 | 80 | 86 | 91 | 77 | 71 | 78 | 1014     |

## **Lampiran 5**

# **Validitas dan Realibilitas Instrumen Penelitian**



### Validitas dan realibilitas instrument karakteristik guru

#### Koefisien Korelasi

$$r_{hitung} = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

| No. Item         | 1     | 2     | 3       | 4     | 5       | 6       | 7     | 8     | 9     | 10    | 11    | 12    |
|------------------|-------|-------|---------|-------|---------|---------|-------|-------|-------|-------|-------|-------|
| <i>r hitung</i>  | 0.457 | 0.513 | 0.152   | 0.567 | -0.045  | 0.032   | 0.457 | 0.514 | 0.496 | 0.397 | 0.741 | 0.613 |
| <i>r tabel</i>   | 0.361 | 0.361 | 0.361   | 0.361 | 0.361   | 0.361   | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 |
| <b>Keputusan</b> | Valid | Valid | Invalid | Valid | Invalid | Invalid | Valid | Valid | Valid | Valid | Valid | Valid |

| 13    | 14      | 15      | 16    | 17    | 18    | 19    | 20    |
|-------|---------|---------|-------|-------|-------|-------|-------|
| 0.580 | 0.191   | 0.341   | 0.554 | 0.597 | 0.421 | 0.673 | 0.523 |
| 0.361 | 0.361   | 0.361   | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 |
| Valid | Invalid | Invalid | Valid | Valid | Valid | Valid | Valid |

#### Varian Skor Tiap Item

$$S_i = \frac{\sum JK_i^2 - \frac{(\sum JKs)^2}{N}}{N}$$

| No. Item | 1    | 2    | 3    | 4    | 5    | 6    | 7     | 8     | 9    | 10   | 11   | 12   |
|----------|------|------|------|------|------|------|-------|-------|------|------|------|------|
|          | 0.56 | 0.75 | 0.38 | 0.41 | 0.44 | 0.37 | 0.543 | 0.488 | 0.44 | 0.38 | 0.42 | 0.45 |

| 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   |
|------|------|------|------|------|------|------|------|
| 0.61 | 0.37 | 0.43 | 0.57 | 0.82 | 0.44 | 0.46 | 0.56 |

## Validitas dan realibilitas instrument fasilitas belajar

### Koefisien Korelasi

$$r_{hitung} = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

| No. Item        | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10      | 11    | 12    |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| <i>r</i> hitung | 0.680 | 0.397 | 0.677 | 0.660 | 0.546 | 0.430 | 0.437 | 0.528 | 0.650 | 0.088   | 0.437 | 0.781 |
| <i>r</i> tabel  | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361   | 0.361 | 0.361 |
| Keputusan       | Valid | Valid | Valid | Valid | Valid | Valid | Valid | Valid | Valid | Invalid | Valid | Valid |
| 13              | 14    | 15    | 16    |       |       |       |       |       |       |         |       |       |
| 0.392           | 0.545 | 0.510 | 0.397 |       |       |       |       |       |       |         |       |       |
| 0.361           | 0.361 | 0.361 | 0.361 |       |       |       |       |       |       |         |       |       |
| Valid           | Valid | Valid | Valid |       |       |       |       |       |       |         |       |       |

### Realibilitas Instrumen uji coba

#### Varian Skor Tiap Item

$$S_i = \frac{\sum JK_i^2 - \frac{(\sum JK_s)^2}{N}}{N}$$

| No. Item | 1    | 2     | 3    | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11   |
|----------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|------|
|          | 0.47 | 0.343 | 0.39 | 0.712 | 0.645 | 0.448 | 0.328 | 0.515 | 0.472 | 0.312 | 0.36 |
| 12       | 13   | 14    |      |       |       |       |       |       |       |       |      |
| 0.528889 | 0.70 | 0.34  |      |       |       |       |       |       |       |       |      |

**Validitas dan realibilitas  
instrument kualitas  
pembelajaran  
Koefisien Korelasi**

$$r_{hitung} = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

| No. Item     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11      | 12    |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|
| $r_{hitung}$ | 0.493 | 0.466 | 0.395 | 0.450 | 0.579 | 0.471 | 0.647 | 0.559 | 0.420 | 0.620 | 0.337   | 0.404 |
| $r_{tabel}$  | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361 | 0.361   | 0.361 |
| Keputusan    | Valid | Valid | Valid | Valid | Valid | Valid | Valid | Valid | Valid | Valid | Invalid | Valid |

**Varian Skor Tiap Item**

$$S_i = \frac{\sum JK_i^2 - \frac{(\sum JK_s)^2}{N}}{N}$$

| No. Item | 1     | 2    | 3    | 4    | 5    | 6     | 7    | 8    | 9    | 10    | 11   | 12   |
|----------|-------|------|------|------|------|-------|------|------|------|-------|------|------|
|          | 0.565 | 0.44 | 0.82 | 0.42 | 0.56 | 0.396 | 1.08 | 0.71 | 0.43 | 0.645 | 0.43 | 0.50 |

$$\sum S_i = 7.04222222$$

Varian Skor Total

$$S_t = 18.027$$

**Signifikansi**

$$r = \left( \frac{k}{k-1} \right) \left( 1 - \frac{\sum S_i^2}{S_t^2} \right)$$

$$r_{tabel, n=30 (5\%)} = 0,381$$

$$r = 0.630 > r_{tabel} 0.361$$

Keputusan [Reliabel](#)

## **Lampiran 6**

### **Surat Izin Pelaksanaan Penelitian**



**SURAT IZIN**

NOMOR : 070/1750  
4557/34

Membaca Surat : Dari Dekan Fak. Teknik - UNY  
Nomor : 2238/UN34.15/PL/2012 Tanggal : 13/06/2012  
Mengingat : 1. Peraturan Daerah Kota Yogyakarta Nomor 10 Tahun 2008 tentang Pembentukan, Susunan, Kedudukan dan Tugas Pokok Dinas Daerah  
2. Peraturan Walikota Yogyakarta Nomor 85 Tahun 2008 tentang Fungsi, Rincian Tugas Dinas Perizinan Kota Yogyakarta;  
3. Peraturan Walikota Yogyakarta Nomor 29 Tahun 2007 tentang Pemberian Izin Penelitian, Praktek Kerja Lapangan dan Kuliah Kerja Nyata di Wilayah Kota Yogyakarta;  
4. Peraturan Walikota Yogyakarta Nomor 18 Tahun 2011 tentang Penyelenggaraan Perizinan pada Pemerintah Kota Yogyakarta;  
5. Keputusan Gubernur Daerah Istimewa Yogyakarta Nomor: 38/I.2/2004 tentang Pemberian izin/Rekomendasi Penelitian/Pendataan/Survei/KKN/PKL di Daerah Istimewa Yogyakarta.

Dijinkan Kepada : Nama : TEGUH BUDIONO NO MHS / NIM : 08503241017  
Pekerjaan : Mahasiswa Fak. Teknik - UNY  
Alamat : Kampus Karangmalang, Yogyakarta  
Penanggungjawab : Dr. Zainur Rofiq, M.Pd.  
Keperluan : Melakukan Penelitian dengan judul Proposal : HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI SMK NEGERI 2 YOGYAKARTA

Lokasi/Responden : Kota Yogyakarta  
Waktu : 13/06/2012 Sampai 13/09/2012  
Lampiran : Proposal dan Daftar Pertanyaan  
Dengan Ketentuan : 1. Wajib Memberi Laporan hasil Penelitian kepada Walikota Yogyakarta (Cq. Dinas Perizinan Kota Yogyakarta)  
2. Wajib Menjaga Tata tertib dan mentaati ketentuan-ketentuan yang berlaku setempat  
3. Izin ini tidak disalahgunakan untuk tujuan tertentu yang dapat mengganggu kestabilan Pemerintah dan hanya diperlukan untuk keperluan ilmiah  
4. Surat izin ini sewaktu-waktu dapat dibatalkan apabila tidak dipenuhinya ketentuan-ketentuan tersebut diatas  
Kemudian diharap para Pejabat Pemerintah setempat dapat memberi bantuan seperlunya

Tanda tangan  
Pemegang Izin

TEGUH BUDIONO

Dikeluarkan di : Yogyakarta  
pada Tanggal : 13-6-2012

An. Kepala Dinas Perizinan  
Sekretaris



Drs. HARDONO  
NIP 195804101985031013

Tembusan Kepada :

- Yth. 1. Walikota Yogyakarta(sebagai laporan)  
2. Ka. Dinas Pendidikan Kota Yogyakarta  
3. Kepala SMK Negeri 2 Yogyakarta  
4. Dekan Fak. Teknik - UNY  
5. Ybs.



PEMERINTAH PROVINSI DAERAH ISTIMEWA YOGYAKARTA  
**SEKRETARIAT DAERAH**

Kompleks Kepatihan, Danurejan, Telepon (0274) 562811 - 562814 (Hunting)  
YOGYAKARTA 55213

SURAT KETERANGAN / IJIN

070/5841/V/6/2012

Membaca Surat : Dekan Fak. Teknik UNY  
Tanggal : 13 Juni 2012  
Nomor : 2238/UN34.15/PL/2012  
Perihal : Permohonan Ijin Penelitian

Mengingat : 1. Peraturan Pemerintah Nomor 41 Tahun 2006, tentang Perizinan bagi Perguruan Tinggi Asing, Lembaga Penelitian dan Pengembangan Asing, Badan Usaha Asing dan Orang Asing dalam melakukan Kegiatan Penelitian dan Pengembangan di Indonesia;  
2. Peraturan Menteri Dalam Negeri Nomor 33 Tahun 2007, tentang Pedoman penyelenggaraan Penelitian dan Pengembangan di Lingkungan Departemen Dalam Negeri dan Pemerintah Daerah;  
3. Peraturan Gubernur Daerah Istimewa Yogyakarta Nomor 37 Tahun 2008, tentang Rincian Tugas dan Fungsi Satuan Organisasi di Lingkungan Sekretariat Daerah dan Sekretariat Dewan Perwakilan Rakyat Daerah.  
4. Peraturan Gubernur Daerah Istimewa Yogyakarta Nomor 18 Tahun 2009 tentang Pedoman Pelayanan Perizinan, Rekomendasi Pelaksanaan Survei, Penelitian, Pendataan, Pengembangan, Pengkajian, dan Studi Lapangan di Daerah Istimewa Yogyakarta.

DIIJINKAN untuk melakukan kegiatan survei/penelitian/pendataan/pengembangan/pengkajian/studi lapangan kepada:

Nama : TEGUH BUDIONO NIP/NIM : 08503241017  
Alamat : Karangmalang, Yogyakarta  
Judul : HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI SMK NEGERI 2 YOGYAKARTA  
Lokasi : - Kota/Kab. KOTA YOGYAKARTA  
Waktu : 13 Juni 2012 s/d 13 September 2012

**Dengan Ketentuan**

- Menyerahkan surat keterangan/ijin survei/penelitian/pendataan/pengembangan/pengkajian/studi lapangan \*) dari Pemerintah Provinsi DIY kepada Bupati/Walikota melalui institusi yang berwenang mengeluarkan ijin dimaksud;
- Menyerahkan soft copy hasil penelitiannya baik kepada Gubernur Daerah Istimewa Yogyakarta melalui Biro Administrasi Pembangunan Setda Provinsi DIY dalam compact disk (CD) maupun mengunggah (upload) melalui website [adbang.jogjapro.go.id](http://adbang.jogjapro.go.id) dan menunjukkan cetakan asli yang sudah disahkan dan dibubuhi cap institusi;
- Ijin ini hanya dipergunakan untuk keperluan ilmiah, dan pemegang ijin wajib mentaati ketentuan yang berlaku di lokasi kegiatan;
- Ijin penelitian dapat diperpanjang maksimal 2 (dua) kali dengan menunjukkan surat ini kembali sebelum berakhir waktunya setelah mengajukan perpanjangan melalui website [adbang.jogjapro.go.id](http://adbang.jogjapro.go.id);
- Ijin yang diberikan dapat dibatalkan sewaktu-waktu apabila pemegang ijin ini tidak memenuhi ketentuan yang berlaku.

Dikeluarkan di Yogyakarta  
Pada tanggal 13 Juni 2012  
A.n Sekretaris Daerah  
Asisten Perekonomian dan Pembangunan  
Ub.  
Kepala Biro Administrasi Pembangunan



**Tembusan :**

- Yth. Gubernur Daerah Istimewa Yogyakarta (sebagai laporan);
- Walikota Yogyakarta c.q Ka. Dinas Perizinan
- Ka. Dinas Pendidikan, Pemuda & OR Prov. DIY
- Dekan Fak. Teknik UNY
- Yang Bersangkutan



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
UNIVERSITAS NEGERI YOGYAKARTA  
**FAKULTAS TEKNIK**

Alamat : Kampus Karangmalang, Yogyakarta, 55281  
Telp. (0274) 586168 psw. 276.289.292 (0274) 586734 Fax. (0274) 586734  
website : <http://ft.uny.ac.id> e-mail : [ft@uny.ac.id](mailto:ft@uny.ac.id) , [teknik@uny.ac.id](mailto:teknik@uny.ac.id)



Certificate No. QSC 0050

Nomor : 2238/UN34.15/PL/2012  
Lamp. : 1 (satu) bendel  
Hal : Permohonan Ijin Penelitian

13 Juni 2012

Yth.

1. Gubernur Provinsi DIY c.q. Ka. Biro Administrasi Pembangunan Setda Provinsi DIY
2. Walikota Yogyakarta c.q. Kepala Dinas Perijinan Kota Yogyakarta
3. Kepala Dinas Pendidikan, Pemuda dan Olahraga Propinsi DIY
4. Kepala Dinas Pendidikan Kota Yogyakarta
5. KEPALA SMK NEGERI 2 YOGYAKARTA

Dalam rangka pelaksanaan Tugas Akhir Skripsi kami mohon dengan hormat bantuan Saudara memberikan ijin untuk melaksanakan penelitian dengan judul "HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI SMK NEGERI 2 YOGYAKARTA", bagi mahasiswa Fakultas Teknik Universitas Negeri Yogyakarta tersebut di bawah ini:

| No. | Nama          | NIM         | Jurusan/Prodi           | Lokasi Penelitian       |
|-----|---------------|-------------|-------------------------|-------------------------|
| 01  | Teguh Budiono | 08503241017 | Pend. Teknik Mesin - S1 | SMK NEGERI 2 YOGYAKARTA |

Dosen Pembimbing/Dosen Pengampu : Dr. Zainur Rofiq.  
NIP : 19640203 198812 1 001

Adapun pelaksanaan penelitian dilakukan mulai tanggal 13 Juni 2012 sampai dengan selesai.

Demikian permohonan ini, atas bantuan dan kerjasama yang baik selama ini, kami mengucapkan terima kasih.

Dekan,  
Wakil Dekan I,



Dr. Sunaryo Soenarto  
NIP 19580630 198601 1 001

Tembusan:  
Ketua Jurusan

08503241017 No. 803





**SURAT KETERANGAN**

No. : 423/1173

Kepala SMK Negeri 2 Yogyakarta menerangkan bahwa :

Nama : Teguh Budiono  
No. Mahasiswa : 08503241017  
Program Studi : S1 – Pendidikan Teknik Mesin  
Universitas Negeri Yogyakarta

Berdasarkan surat dari Dinas Perizinan Nomor : 070/1750 tanggal 13 Juni 2012 perihal Permohonan Ijin Penelitian, bahwa mahasiswa tersebut telah melaksanakan pengambilan data yang telah selesai dilaksanakan pada tanggal 13 Juni 2012 - 16 Juni 2012 dengan judul :

"HUBUNGAN KARAKTERISTIK GURU DAN FASILITAS BELAJAR DENGAN KUALITAS PEMBELAJARAN SISWA DI SMK NEGERI 2 YOGYAKARTA"

Demikian surat keterangan ini dibuat untuk digunakan sebagaimana mestinya



Yogyakarta, 10 Agustus 2012  
Kepala Sekolah

Drs. Paryoto, MT.  
NIP. 19641214 199003 1 007



## **Lampiran 7**

### **Data Entry Instrumen Penelitian**

**Data Entry Instrumen Penelitian Kuisisioner Karakteristik Guru**

| No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 1   | 4 | 4 |   | 4 |   |   | 4 | 4 | 4 | 4  | 4  | 4  | 4  |    |    | 4  | 4  | 4  | 4  | 4  |
| 2   | 4 | 3 |   | 3 |   |   | 3 | 4 | 3 | 3  | 3  | 1  | 3  |    |    | 3  | 3  | 3  | 3  | 3  |
| 3   | 2 | 3 |   | 2 |   |   | 2 | 2 | 3 | 4  | 3  | 4  | 3  |    |    | 2  | 3  | 4  | 3  | 3  |
| 4   | 4 | 4 |   | 3 |   |   | 3 | 4 | 4 | 3  | 4  | 3  | 4  |    |    | 3  | 3  | 2  | 4  | 3  |
| 5   | 4 | 3 |   | 4 |   |   | 3 | 2 | 3 | 3  | 3  | 2  | 3  |    |    | 1  | 3  | 3  | 3  | 3  |
| 6   | 3 | 2 |   | 2 |   |   | 3 | 2 | 3 | 3  | 3  | 2  | 2  |    |    | 4  | 3  | 3  | 3  | 3  |
| 7   | 4 | 2 |   | 2 |   |   | 3 | 4 | 3 | 4  | 4  | 3  | 2  |    |    | 3  | 4  | 3  | 3  | 4  |
| 8   | 4 | 3 |   | 3 |   |   | 3 | 2 | 3 | 4  | 3  | 3  | 3  |    |    | 4  | 4  | 3  | 4  | 4  |
| 9   | 3 | 3 |   | 3 |   |   | 4 | 3 | 3 | 3  | 3  | 4  | 4  |    |    | 4  | 3  | 4  | 4  | 3  |
| 10  | 4 | 3 |   | 3 |   |   | 3 | 3 | 3 | 4  | 3  | 2  | 4  |    |    | 4  | 4  | 4  | 2  | 4  |
| 11  | 4 | 4 |   | 3 |   |   | 3 | 3 | 3 | 4  | 3  | 2  | 3  |    |    | 4  | 3  | 2  | 3  | 1  |
| 12  | 4 | 3 |   | 3 |   |   | 2 | 4 | 1 | 4  | 2  | 3  | 2  |    |    | 2  | 4  | 4  | 4  | 4  |
| 13  | 4 | 4 |   | 4 |   |   | 2 | 2 | 4 | 4  | 3  | 3  | 4  |    |    | 4  | 4  | 3  | 3  | 4  |
| 14  | 4 | 3 |   | 3 |   |   | 4 | 4 | 3 | 4  | 3  | 4  | 3  |    |    | 4  | 4  | 4  | 4  | 3  |
| 15  | 3 | 4 |   | 3 |   |   | 2 | 3 | 2 | 3  | 4  | 2  | 2  |    |    | 3  | 3  | 2  | 3  | 3  |
| 16  | 4 | 4 |   | 4 |   |   | 2 | 3 | 3 | 3  | 4  | 3  | 3  |    |    | 3  | 3  | 3  | 3  | 3  |
| 17  | 3 | 3 |   | 3 |   |   | 3 | 3 | 3 | 3  | 4  | 4  | 3  |    |    | 4  | 2  | 3  | 4  | 3  |
| 18  | 3 | 4 |   | 4 |   |   | 4 | 3 | 4 | 3  | 4  | 3  | 4  |    |    | 4  | 4  | 3  | 4  | 3  |
| 19  | 3 | 3 |   | 4 |   |   | 2 | 4 | 3 | 3  | 3  | 3  | 4  |    |    | 3  | 3  | 3  | 3  | 1  |
| 20  | 3 | 3 |   | 3 |   |   | 2 | 2 | 3 | 4  | 4  | 3  | 3  |    |    | 2  | 4  | 4  | 4  | 3  |
| 21  | 3 | 3 |   | 3 |   |   | 3 | 3 | 3 | 3  | 3  | 3  | 3  |    |    | 3  | 3  | 2  | 3  | 2  |
| 22  | 3 | 3 |   | 2 |   |   | 3 | 3 | 3 | 3  | 3  | 3  | 2  |    |    | 3  | 3  | 3  | 3  | 2  |
| 23  | 4 | 3 |   | 3 |   |   | 3 | 3 | 3 | 3  | 3  | 2  | 3  |    |    | 4  | 3  | 2  | 4  | 3  |
| 24  | 4 | 4 |   | 4 |   |   | 3 | 4 | 3 | 3  | 3  | 3  | 4  |    |    | 2  | 3  | 3  | 3  | 2  |
| 25  | 3 | 2 |   | 3 |   |   | 3 | 3 | 3 | 2  | 3  | 2  | 3  |    |    | 2  | 2  | 2  | 2  | 2  |
| 26  | 3 | 3 |   | 2 |   |   | 4 | 4 | 2 | 3  | 3  | 2  | 2  |    |    | 1  | 3  | 3  | 3  | 2  |
| 27  | 3 | 4 |   | 2 |   |   | 2 | 4 | 2 | 3  | 3  | 3  | 2  |    |    | 3  | 4  | 3  | 2  | 2  |
| 28  | 3 | 3 |   | 3 |   |   | 3 | 3 | 2 | 3  | 3  | 4  | 2  |    |    | 3  | 3  | 3  | 3  | 3  |
| 29  | 2 | 2 |   | 3 |   |   | 3 | 3 | 2 | 3  | 3  | 2  | 3  |    |    | 3  | 3  | 2  | 2  | 2  |
| 30  | 2 | 1 |   | 2 |   |   | 2 | 4 | 2 | 3  | 3  | 2  | 2  |    |    | 3  | 2  | 2  | 2  | 2  |
| 31  | 3 | 3 |   | 3 |   |   | 3 | 2 | 3 | 2  | 3  | 4  | 3  |    |    | 4  | 3  | 3  | 3  | 3  |
| 32  | 4 | 2 |   | 2 |   |   | 3 | 3 | 3 | 3  | 4  | 3  | 3  |    |    | 4  | 4  | 3  | 3  | 4  |
| 33  | 4 | 4 |   | 4 |   |   | 4 | 4 | 4 | 4  | 4  | 3  | 4  |    |    | 4  | 4  | 2  | 4  | 4  |
| 34  | 4 | 3 |   | 3 |   |   | 4 | 3 | 2 | 2  | 3  | 2  | 4  |    |    | 4  | 3  | 3  | 4  | 2  |
| 35  | 3 | 2 |   | 2 |   |   | 2 | 4 | 2 | 3  | 3  | 2  | 2  |    |    | 2  | 3  | 3  | 2  | 2  |
| 36  | 2 | 2 |   | 3 |   |   | 2 | 3 | 3 | 4  | 2  | 2  | 2  |    |    | 3  | 3  | 3  | 3  | 3  |

|    |   |   |  |   |  |  |   |   |   |   |   |   |   |  |  |   |   |   |   |   |
|----|---|---|--|---|--|--|---|---|---|---|---|---|---|--|--|---|---|---|---|---|
| 37 | 2 | 4 |  | 4 |  |  | 2 | 2 | 2 | 3 | 4 | 2 | 4 |  |  | 4 | 4 | 2 | 2 | 4 |
| 38 | 3 | 3 |  | 2 |  |  | 2 | 2 | 3 | 2 | 2 | 2 | 2 |  |  | 2 | 1 | 2 | 3 | 2 |
| 39 | 4 | 4 |  | 3 |  |  | 4 | 3 | 3 | 3 | 4 | 3 | 4 |  |  | 4 | 4 | 4 | 4 | 2 |
| 40 | 4 | 4 |  | 4 |  |  | 2 | 4 | 4 | 4 | 4 | 4 | 3 |  |  | 4 | 3 | 3 | 4 | 3 |
| 41 | 4 | 2 |  | 2 |  |  | 2 | 2 | 2 | 3 | 3 | 3 | 3 |  |  | 4 | 2 | 2 | 3 | 2 |
| 42 | 3 | 4 |  | 3 |  |  | 2 | 2 | 2 | 4 | 3 | 3 | 4 |  |  | 4 | 3 | 4 | 4 | 4 |
| 43 | 3 | 3 |  | 3 |  |  | 2 | 3 | 2 | 3 | 3 | 2 | 2 |  |  | 3 | 3 | 2 | 2 | 2 |
| 44 | 4 | 3 |  | 2 |  |  | 2 | 3 | 3 | 3 | 4 | 2 | 4 |  |  | 4 | 2 | 4 | 3 | 2 |
| 45 | 3 | 3 |  | 2 |  |  | 3 | 3 | 2 | 3 | 3 | 3 | 4 |  |  | 4 | 3 | 2 | 3 | 4 |
| 46 | 2 | 2 |  | 3 |  |  | 4 | 3 | 3 | 3 | 3 | 3 | 2 |  |  | 3 | 3 | 2 | 3 | 3 |
| 47 | 2 | 3 |  | 3 |  |  | 2 | 2 | 2 | 3 | 2 | 2 | 4 |  |  | 2 | 2 | 2 | 2 | 2 |
| 48 | 3 | 3 |  | 3 |  |  | 3 | 3 | 3 | 3 | 3 | 3 | 3 |  |  | 3 | 3 | 3 | 3 | 2 |
| 49 | 3 | 3 |  | 2 |  |  | 2 | 2 | 2 | 2 | 2 | 2 | 2 |  |  | 3 | 2 | 3 | 2 | 3 |
| 50 | 4 | 4 |  | 3 |  |  | 3 | 4 | 3 | 3 | 3 | 2 | 2 |  |  | 2 | 4 | 2 | 3 | 4 |
| 51 | 4 | 1 |  | 3 |  |  | 3 | 3 | 2 | 4 | 3 | 2 | 2 |  |  | 4 | 4 | 2 | 3 | 4 |
| 52 | 4 | 3 |  | 2 |  |  | 2 | 3 | 2 | 4 | 3 | 3 | 2 |  |  | 4 | 3 | 2 | 3 | 2 |
| 53 | 3 | 3 |  | 2 |  |  | 3 | 2 | 4 | 3 | 3 | 2 | 2 |  |  | 2 | 1 | 2 | 3 | 2 |
| 54 | 3 | 4 |  | 3 |  |  | 3 | 4 | 3 | 4 | 3 | 3 | 3 |  |  | 3 | 4 | 3 | 3 | 3 |
| 55 | 4 | 3 |  | 2 |  |  | 4 | 3 | 2 | 3 | 4 | 1 | 2 |  |  | 2 | 3 | 2 | 2 | 2 |
| 56 | 2 | 2 |  | 3 |  |  | 2 | 3 | 3 | 3 | 3 | 2 | 3 |  |  | 3 | 3 | 3 | 3 | 3 |
| 57 | 4 | 3 |  | 3 |  |  | 3 | 2 | 2 | 3 | 3 | 3 | 4 |  |  | 3 | 3 | 2 | 2 | 3 |
| 58 | 3 | 4 |  | 3 |  |  | 3 | 2 | 3 | 3 | 3 | 2 | 2 |  |  | 3 | 1 | 3 | 3 | 3 |
| 59 | 4 | 3 |  | 3 |  |  | 3 | 2 | 2 | 4 | 4 | 3 | 3 |  |  | 3 | 4 | 4 | 4 | 4 |
| 60 | 3 | 2 |  | 4 |  |  | 3 | 2 | 4 | 3 | 2 | 2 | 3 |  |  | 3 | 3 | 2 | 3 | 2 |
| 61 | 4 | 3 |  | 2 |  |  | 3 | 4 | 3 | 3 | 3 | 3 | 3 |  |  | 3 | 3 | 3 | 3 | 3 |
| 62 | 4 | 4 |  | 3 |  |  | 3 | 4 | 4 | 3 | 4 | 2 | 3 |  |  | 3 | 3 | 3 | 2 | 3 |
| 63 | 4 | 3 |  | 2 |  |  | 4 | 2 | 3 | 4 | 3 | 2 | 3 |  |  | 3 | 3 | 3 | 2 | 2 |
| 64 | 4 | 4 |  | 3 |  |  | 4 | 3 | 2 | 3 | 4 | 2 | 2 |  |  | 4 | 3 | 4 | 4 | 3 |
| 65 | 4 | 3 |  | 2 |  |  | 3 | 3 | 2 | 4 | 4 | 3 | 3 |  |  | 4 | 4 | 3 | 4 | 4 |
| 66 | 4 | 3 |  | 2 |  |  | 3 | 2 | 2 | 3 | 2 | 2 | 4 |  |  | 3 | 3 | 2 | 3 | 3 |
| 67 | 4 | 3 |  | 2 |  |  | 2 | 2 | 3 | 3 | 3 | 2 | 3 |  |  | 3 | 3 | 2 | 3 | 3 |
| 68 | 4 | 3 |  | 4 |  |  | 3 | 2 | 2 | 4 | 3 | 4 | 3 |  |  | 3 | 3 | 4 | 3 | 3 |
| 69 | 3 | 4 |  | 4 |  |  | 4 | 4 | 4 | 2 | 4 | 3 | 3 |  |  | 4 | 4 | 3 | 3 | 2 |
| 70 | 3 | 2 |  | 3 |  |  | 4 | 2 | 3 | 2 | 3 | 3 | 2 |  |  | 3 | 3 | 3 | 3 | 2 |
| 71 | 4 | 3 |  | 2 |  |  | 4 | 3 | 4 | 3 | 3 | 3 | 3 |  |  | 4 | 3 | 4 | 4 | 4 |
| 72 | 4 | 3 |  | 2 |  |  | 3 | 4 | 2 | 4 | 3 | 4 | 3 |  |  | 4 | 4 | 2 | 3 | 4 |
| 73 | 3 | 3 |  | 2 |  |  | 3 | 2 | 3 | 2 | 3 | 2 | 2 |  |  | 3 | 4 | 3 | 3 | 2 |
| 74 | 3 | 3 |  | 2 |  |  | 3 | 3 | 3 | 3 | 3 | 2 | 4 |  |  | 2 | 3 | 2 | 3 | 2 |
| 75 | 4 | 4 |  | 2 |  |  | 3 | 4 | 3 | 3 | 4 | 3 | 3 |  |  | 2 | 3 | 2 | 3 | 2 |

|     |   |   |  |   |  |  |   |   |   |   |   |   |   |  |  |   |   |   |   |   |
|-----|---|---|--|---|--|--|---|---|---|---|---|---|---|--|--|---|---|---|---|---|
| 76  | 3 | 4 |  | 2 |  |  | 3 | 2 | 3 | 4 | 2 | 2 | 3 |  |  | 2 | 4 | 2 | 2 | 2 |
| 77  | 2 | 3 |  | 2 |  |  | 3 | 2 | 2 | 3 | 2 | 3 | 3 |  |  | 4 | 4 | 2 | 4 | 3 |
| 78  | 4 | 3 |  | 2 |  |  | 4 | 2 | 3 | 3 | 4 | 2 | 3 |  |  | 3 | 4 | 3 | 3 | 3 |
| 79  | 4 | 3 |  | 4 |  |  | 4 | 3 | 2 | 4 | 4 | 2 | 4 |  |  | 3 | 4 | 2 | 4 | 2 |
| 80  | 3 | 2 |  | 3 |  |  | 3 | 2 | 3 | 3 | 3 | 2 | 3 |  |  | 3 | 3 | 2 | 3 | 3 |
| 81  | 3 | 2 |  | 3 |  |  | 3 | 3 | 3 | 3 | 3 | 2 | 3 |  |  | 4 | 4 | 2 | 2 | 3 |
| 82  | 3 | 2 |  | 3 |  |  | 3 | 3 | 3 | 4 | 2 | 4 | 3 |  |  | 4 | 4 | 3 | 4 | 3 |
| 83  | 4 | 3 |  | 3 |  |  | 2 | 3 | 3 | 4 | 3 | 2 | 3 |  |  | 2 | 4 | 4 | 2 | 3 |
| 84  | 3 | 3 |  | 3 |  |  | 2 | 3 | 2 | 3 | 3 | 3 | 3 |  |  | 2 | 3 | 2 | 2 | 3 |
| 85  | 4 | 3 |  | 4 |  |  | 3 | 3 | 4 | 2 | 3 | 2 | 4 |  |  | 4 | 4 | 3 | 3 | 2 |
| 86  | 4 | 3 |  | 2 |  |  | 3 | 2 | 3 | 4 | 3 | 4 | 3 |  |  | 4 | 4 | 4 | 4 | 2 |
| 87  | 3 | 3 |  | 3 |  |  | 3 | 2 | 3 | 3 | 2 | 2 | 2 |  |  | 1 | 3 | 3 | 2 | 3 |
| 88  | 3 | 4 |  | 2 |  |  | 2 | 3 | 4 | 4 | 3 | 3 | 4 |  |  | 3 | 4 | 3 | 4 | 4 |
| 89  | 4 | 3 |  | 3 |  |  | 2 | 2 | 3 | 3 | 4 | 2 | 3 |  |  | 2 | 4 | 2 | 3 | 3 |
| 90  | 4 | 4 |  | 3 |  |  | 2 | 4 | 2 | 2 | 4 | 4 | 4 |  |  | 4 | 4 | 3 | 2 | 3 |
| 91  | 4 | 3 |  | 3 |  |  | 4 | 3 | 4 | 3 | 3 | 3 | 3 |  |  | 4 | 4 | 4 | 4 | 3 |
| 92  | 4 | 2 |  | 4 |  |  | 2 | 4 | 2 | 3 | 2 | 3 | 2 |  |  | 3 | 4 | 2 | 2 | 2 |
| 93  | 4 | 4 |  | 4 |  |  | 3 | 4 | 4 | 3 | 4 | 2 | 3 |  |  | 3 | 3 | 3 | 3 | 3 |
| 94  | 4 | 3 |  | 2 |  |  | 4 | 3 | 3 | 4 | 4 | 4 | 4 |  |  | 3 | 4 | 4 | 4 | 3 |
| 95  | 3 | 2 |  | 3 |  |  | 2 | 2 | 2 | 2 | 3 | 3 | 2 |  |  | 2 | 3 | 3 | 4 | 4 |
| 96  | 4 | 4 |  | 4 |  |  | 4 | 4 | 3 | 2 | 4 | 3 | 4 |  |  | 3 | 4 | 3 | 2 | 2 |
| 97  | 4 | 3 |  | 2 |  |  | 3 | 4 | 3 | 4 | 3 | 2 | 4 |  |  | 4 | 4 | 4 | 4 | 2 |
| 98  | 4 | 4 |  | 4 |  |  | 4 | 1 | 4 | 4 | 3 | 2 | 1 |  |  | 4 | 4 | 3 | 4 | 4 |
| 99  | 4 | 2 |  | 3 |  |  | 1 | 4 | 3 | 4 | 3 | 4 | 2 |  |  | 4 | 4 | 4 | 4 | 3 |
| 100 | 4 | 3 |  | 4 |  |  | 2 | 4 | 2 | 3 | 3 | 2 | 4 |  |  | 3 | 3 | 3 | 4 | 3 |
| 101 | 3 | 3 |  | 4 |  |  | 2 | 2 | 2 | 2 | 3 | 2 | 3 |  |  | 3 | 3 | 3 | 2 | 3 |
| 102 | 3 | 4 |  | 4 |  |  | 3 | 3 | 2 | 3 | 3 | 4 | 3 |  |  | 3 | 3 | 3 | 3 | 3 |
| 103 | 3 | 3 |  | 3 |  |  | 2 | 2 | 4 | 4 | 1 | 4 | 3 |  |  | 2 | 3 | 4 | 2 | 2 |
| 104 | 4 | 4 |  | 4 |  |  | 4 | 2 | 3 | 3 | 2 | 3 | 3 |  |  | 3 | 3 | 3 | 3 | 2 |
| 105 | 4 | 3 |  | 3 |  |  | 2 | 3 | 4 | 4 | 2 | 3 | 1 |  |  | 2 | 3 | 2 | 2 | 2 |
| 106 | 3 | 3 |  | 2 |  |  | 2 | 2 | 4 | 3 | 2 | 3 | 2 |  |  | 3 | 4 | 3 | 3 | 2 |
| 107 | 3 | 3 |  | 1 |  |  | 4 | 4 | 3 | 4 | 4 | 4 | 2 |  |  | 2 | 4 | 4 | 4 | 4 |
| 108 | 3 | 3 |  | 2 |  |  | 3 | 2 | 2 | 3 | 4 | 2 | 2 |  |  | 2 | 4 | 3 | 4 | 2 |
| 109 | 3 | 2 |  | 1 |  |  | 1 | 2 | 1 | 4 | 3 | 4 | 2 |  |  | 3 | 4 | 2 | 4 | 2 |
| 110 | 4 | 4 |  | 3 |  |  | 4 | 3 | 3 | 2 | 3 | 2 | 4 |  |  | 4 | 2 | 2 | 4 | 3 |
| 111 | 2 | 4 |  | 4 |  |  | 4 | 4 | 3 | 4 | 3 | 2 | 4 |  |  | 3 | 3 | 3 | 3 | 3 |
| 112 | 4 | 3 |  | 2 |  |  | 2 | 3 | 4 | 4 | 3 | 3 | 2 |  |  | 3 | 4 | 4 | 2 | 4 |
| 113 | 4 | 4 |  | 3 |  |  | 4 | 2 | 3 | 3 | 2 | 2 | 4 |  |  | 2 | 4 | 3 | 3 | 2 |
| 114 | 1 | 4 |  | 4 |  |  | 1 | 1 | 2 | 3 | 3 | 2 | 2 |  |  | 4 | 4 | 4 | 4 | 4 |

|     |   |   |  |   |  |  |   |   |   |   |   |   |   |  |  |   |   |   |   |   |
|-----|---|---|--|---|--|--|---|---|---|---|---|---|---|--|--|---|---|---|---|---|
| 115 | 4 | 3 |  | 2 |  |  | 2 | 2 | 2 | 2 | 3 | 2 | 1 |  |  | 3 | 2 | 2 | 3 | 2 |
| 116 | 4 | 4 |  | 2 |  |  | 2 | 2 | 2 | 4 | 4 | 4 | 2 |  |  | 4 | 4 | 3 | 2 | 3 |
| 117 | 4 | 3 |  | 4 |  |  | 4 | 2 | 2 | 3 | 2 | 2 | 2 |  |  | 3 | 4 | 3 | 4 | 3 |
| 118 | 4 | 3 |  | 2 |  |  | 2 | 4 | 4 | 3 | 3 | 2 | 2 |  |  | 3 | 3 | 2 | 3 | 4 |
| 119 | 4 | 4 |  | 3 |  |  | 1 | 4 | 4 | 4 | 4 | 3 | 3 |  |  | 3 | 3 | 3 | 2 | 4 |
| 120 | 4 | 3 |  | 4 |  |  | 3 | 2 | 3 | 3 | 3 | 2 | 3 |  |  | 3 | 3 | 3 | 3 | 3 |
| 121 | 2 | 1 |  | 2 |  |  | 2 | 4 | 3 | 3 | 4 | 3 | 2 |  |  | 4 | 4 | 4 | 2 | 4 |
| 122 | 4 | 4 |  | 4 |  |  | 4 | 2 | 4 | 3 | 4 | 3 | 3 |  |  | 2 | 3 | 2 | 4 | 2 |
| 123 | 4 | 4 |  | 3 |  |  | 3 | 3 | 2 | 3 | 3 | 2 | 4 |  |  | 3 | 2 | 3 | 4 | 4 |
| 124 | 3 | 2 |  | 2 |  |  | 3 | 2 | 2 | 3 | 4 | 2 | 3 |  |  | 3 | 3 | 4 | 3 | 4 |
| 125 | 3 | 3 |  | 4 |  |  | 2 | 4 | 3 | 4 | 2 | 2 | 4 |  |  | 3 | 4 | 4 | 3 | 2 |
| 126 | 3 | 2 |  | 3 |  |  | 2 | 3 | 3 | 1 | 3 | 2 | 2 |  |  | 4 | 4 | 4 | 3 | 1 |
| 127 | 4 | 3 |  | 3 |  |  | 3 | 3 | 4 | 4 | 4 | 4 | 4 |  |  | 4 | 4 | 3 | 4 | 1 |
| 128 | 4 | 3 |  | 4 |  |  | 3 | 2 | 3 | 4 | 2 | 2 | 1 |  |  | 3 | 4 | 3 | 2 | 2 |
| 129 | 4 | 2 |  | 3 |  |  | 3 | 3 | 3 | 3 | 4 | 2 | 4 |  |  | 3 | 4 | 3 | 2 | 3 |
| 130 | 3 | 3 |  | 4 |  |  | 4 | 3 | 3 | 4 | 4 | 4 | 4 |  |  | 4 | 3 | 4 | 2 | 4 |
| 131 | 4 | 1 |  | 4 |  |  | 2 | 4 | 4 | 3 | 1 | 3 | 4 |  |  | 3 | 4 | 2 | 3 | 2 |
| 132 | 4 | 4 |  | 4 |  |  | 2 | 3 | 3 | 4 | 4 | 3 | 2 |  |  | 4 | 4 | 2 | 4 | 3 |
| 133 | 3 | 2 |  | 3 |  |  | 2 | 2 | 2 | 3 | 3 | 4 | 3 |  |  | 3 | 4 | 3 | 2 | 3 |
| 134 | 2 | 2 |  | 2 |  |  | 3 | 2 | 3 | 3 | 2 | 3 | 3 |  |  | 4 | 4 | 4 | 4 | 2 |
| 135 | 4 | 4 |  | 4 |  |  | 4 | 4 | 3 | 3 | 4 | 3 | 3 |  |  | 4 | 4 | 4 | 1 | 4 |
| 136 | 4 | 4 |  | 4 |  |  | 4 | 2 | 2 | 3 | 3 | 4 | 2 |  |  | 4 | 3 | 3 | 4 | 4 |
| 137 | 4 | 3 |  | 3 |  |  | 2 | 3 | 3 | 3 | 3 | 4 | 3 |  |  | 4 | 4 | 3 | 3 | 4 |
| 138 | 3 | 2 |  | 2 |  |  | 2 | 4 | 2 | 4 | 4 | 3 | 4 |  |  | 4 | 4 | 3 | 2 | 2 |
| 139 | 4 | 3 |  | 4 |  |  | 4 | 2 | 3 | 2 | 3 | 3 | 4 |  |  | 4 | 4 | 3 | 3 | 4 |
| 140 | 4 | 4 |  | 4 |  |  | 2 | 2 | 4 | 4 | 3 | 4 | 2 |  |  | 2 | 4 | 3 | 4 | 4 |
| 141 | 4 | 3 |  | 4 |  |  | 3 | 2 | 2 | 4 | 3 | 3 | 2 |  |  | 4 | 4 | 3 | 4 | 4 |
| 142 | 4 | 3 |  | 2 |  |  | 3 | 3 | 2 | 3 | 4 | 3 | 2 |  |  | 4 | 4 | 4 | 2 | 3 |
| 143 | 4 | 2 |  | 2 |  |  | 2 | 3 | 3 | 4 | 4 | 3 | 3 |  |  | 4 | 3 | 3 | 3 | 4 |
| 144 | 4 | 4 |  | 2 |  |  | 2 | 4 | 3 | 3 | 4 | 3 | 3 |  |  | 2 | 4 | 3 | 2 | 2 |
| 145 | 4 | 3 |  | 3 |  |  | 3 | 2 | 3 | 4 | 3 | 3 | 3 |  |  | 2 | 4 | 2 | 1 | 4 |
| 146 | 2 | 2 |  | 2 |  |  | 2 | 3 | 3 | 4 | 3 | 4 | 3 |  |  | 4 | 4 | 4 | 2 | 3 |
| 147 | 4 | 2 |  | 2 |  |  | 3 | 2 | 3 | 4 | 3 | 3 | 3 |  |  | 4 | 4 | 3 | 4 | 4 |
| 148 | 4 | 4 |  | 4 |  |  | 4 | 3 | 4 | 4 | 4 | 4 | 4 |  |  | 4 | 4 | 3 | 3 | 4 |
| 149 | 4 | 4 |  | 4 |  |  | 3 | 4 | 3 | 4 | 4 | 4 | 4 |  |  | 4 | 4 | 2 | 3 | 2 |
| 150 | 3 | 2 |  | 4 |  |  | 3 | 4 | 4 | 4 | 4 | 4 | 4 |  |  | 4 | 4 | 4 | 2 | 4 |
| 151 | 4 | 4 |  | 4 |  |  | 4 | 4 | 4 | 4 | 4 | 3 | 3 |  |  | 4 | 4 | 3 | 4 | 3 |
| 152 | 2 | 3 |  | 3 |  |  | 4 | 4 | 4 | 3 | 3 | 1 | 4 |  |  | 4 | 3 | 2 | 3 | 2 |
| 153 | 4 | 2 |  | 3 |  |  | 2 | 2 | 4 | 2 | 3 | 3 | 4 |  |  | 4 | 4 | 3 | 2 | 2 |

|     |   |   |  |   |  |  |   |   |   |   |   |   |   |  |  |   |   |   |   |   |
|-----|---|---|--|---|--|--|---|---|---|---|---|---|---|--|--|---|---|---|---|---|
| 154 | 2 | 2 |  | 3 |  |  | 4 | 3 | 2 | 3 | 2 | 3 | 4 |  |  | 3 | 4 | 4 | 4 | 3 |
| 155 | 4 | 3 |  | 4 |  |  | 4 | 4 | 3 | 4 | 3 | 3 | 3 |  |  | 2 | 4 | 3 | 1 | 2 |
| 156 | 4 | 4 |  | 3 |  |  | 3 | 4 | 3 | 2 | 4 | 4 | 4 |  |  | 4 | 4 | 2 | 2 | 3 |
| 157 | 3 | 3 |  | 2 |  |  | 3 | 2 | 4 | 3 | 3 | 2 | 4 |  |  | 3 | 4 | 3 | 3 | 3 |
| 158 | 4 | 2 |  | 4 |  |  | 2 | 2 | 2 | 4 | 3 | 2 | 4 |  |  | 3 | 4 | 4 | 4 | 4 |
| 159 | 4 | 3 |  | 2 |  |  | 3 | 3 | 3 | 4 | 3 | 2 | 2 |  |  | 2 | 3 | 2 | 4 | 4 |
| 160 | 2 | 2 |  | 4 |  |  | 3 | 3 | 3 | 4 | 3 | 2 | 3 |  |  | 4 | 4 | 2 | 4 | 4 |
| 161 | 4 | 3 |  | 4 |  |  | 3 | 4 | 4 | 4 | 3 | 3 | 4 |  |  | 3 | 3 | 3 | 4 | 4 |
| 162 | 3 | 4 |  | 2 |  |  | 3 | 2 | 2 | 4 | 4 | 2 | 2 |  |  | 4 | 3 | 2 | 4 | 4 |
| 163 | 3 | 3 |  | 2 |  |  | 4 | 4 | 3 | 4 | 3 | 4 | 3 |  |  | 4 | 4 | 3 | 4 | 4 |
| 164 | 2 | 2 |  | 3 |  |  | 2 | 4 | 2 | 3 | 1 | 3 | 2 |  |  | 2 | 4 | 2 | 4 | 4 |
| 165 | 3 | 2 |  | 3 |  |  | 2 | 4 | 3 | 4 | 3 | 2 | 3 |  |  | 4 | 4 | 3 | 4 | 4 |
| 166 | 4 | 3 |  | 4 |  |  | 2 | 3 | 2 | 2 | 2 | 2 | 4 |  |  | 2 | 4 | 2 | 4 | 4 |
| 167 | 4 | 3 |  | 3 |  |  | 1 | 2 | 1 | 1 | 1 | 2 | 4 |  |  | 3 | 2 | 2 | 4 | 4 |
| 168 | 3 | 3 |  | 2 |  |  | 2 | 4 | 2 | 3 | 4 | 2 | 4 |  |  | 4 | 4 | 2 | 4 | 3 |
| 169 | 4 | 2 |  | 2 |  |  | 1 | 4 | 4 | 3 | 1 | 3 | 4 |  |  | 4 | 3 | 3 | 4 | 3 |
| 170 | 4 | 1 |  | 4 |  |  | 1 | 4 | 1 | 2 | 1 | 1 | 4 |  |  | 3 | 2 | 2 | 3 | 2 |
| 171 | 4 | 1 |  | 3 |  |  | 2 | 3 | 3 | 4 | 1 | 2 | 4 |  |  | 3 | 4 | 3 | 4 | 4 |
| 172 | 4 | 2 |  | 2 |  |  | 2 | 4 | 4 | 4 | 3 | 2 | 4 |  |  | 3 | 4 | 3 | 4 | 4 |
| 173 | 2 | 2 |  | 2 |  |  | 2 | 3 | 2 | 4 | 1 | 2 | 2 |  |  | 4 | 4 | 3 | 4 | 4 |
| 174 | 3 | 2 |  | 4 |  |  | 2 | 4 | 2 | 3 | 1 | 3 | 4 |  |  | 4 | 4 | 3 | 4 | 4 |
| 175 | 4 | 1 |  | 3 |  |  | 4 | 2 | 3 | 3 | 3 | 2 | 3 |  |  | 2 | 4 | 3 | 4 | 4 |
| 176 | 3 | 2 |  | 3 |  |  | 2 | 3 | 2 | 4 | 3 | 2 | 3 |  |  | 4 | 4 | 2 | 4 | 4 |
| 177 | 3 | 3 |  | 3 |  |  | 1 | 2 | 2 | 4 | 4 | 2 | 1 |  |  | 4 | 4 | 4 | 4 | 4 |
| 178 | 4 | 2 |  | 2 |  |  | 2 | 3 | 2 | 4 | 1 | 2 | 4 |  |  | 3 | 4 | 3 | 4 | 4 |
| 179 | 4 | 1 |  | 3 |  |  | 2 | 4 | 3 | 4 | 3 | 2 | 4 |  |  | 3 | 4 | 2 | 4 | 4 |
| 180 | 4 | 1 |  | 3 |  |  | 2 | 3 | 2 | 3 | 2 | 4 | 4 |  |  | 4 | 4 | 2 | 3 | 3 |
| 181 | 4 | 2 |  | 4 |  |  | 2 | 4 | 2 | 4 | 2 | 3 | 4 |  |  | 3 | 3 | 4 | 4 | 4 |
| 182 | 3 | 3 |  | 4 |  |  | 2 | 2 | 2 | 4 | 2 | 3 | 4 |  |  | 3 | 3 | 1 | 4 | 2 |
| 183 | 4 | 3 |  | 4 |  |  | 2 | 4 | 2 | 3 | 2 | 2 | 4 |  |  | 3 | 4 | 2 | 4 | 3 |
| 184 | 4 | 2 |  | 4 |  |  | 2 | 2 | 2 | 4 | 2 | 1 | 4 |  |  | 3 | 4 | 1 | 4 | 2 |
| 185 | 3 | 1 |  | 3 |  |  | 2 | 3 | 3 | 3 | 1 | 3 | 4 |  |  | 2 | 3 | 4 | 4 | 3 |
| 186 | 2 | 2 |  | 4 |  |  | 2 | 2 | 2 | 4 | 4 | 2 | 4 |  |  | 4 | 4 | 3 | 4 | 4 |
| 187 | 4 | 3 |  | 3 |  |  | 3 | 3 | 3 | 3 | 1 | 2 | 4 |  |  | 3 | 4 | 3 | 3 | 3 |
| 188 | 4 | 3 |  | 3 |  |  | 2 | 4 | 3 | 3 | 2 | 3 | 4 |  |  | 3 | 4 | 2 | 4 | 3 |
| 189 | 4 | 2 |  | 3 |  |  | 2 | 4 | 2 | 4 | 1 | 2 | 3 |  |  | 2 | 2 | 2 | 4 | 4 |
| 190 | 3 | 4 |  | 3 |  |  | 4 | 4 | 4 | 4 | 4 | 2 | 3 |  |  | 3 | 3 | 2 | 4 | 4 |
| 191 | 3 | 2 |  | 4 |  |  | 2 | 4 | 2 | 4 | 4 | 2 | 3 |  |  | 3 | 4 | 3 | 3 | 3 |
| 192 | 4 | 1 |  | 2 |  |  | 2 | 4 | 4 | 4 | 2 | 1 | 4 |  |  | 2 | 2 | 2 | 3 | 3 |

|     |     |     |   |     |   |   |     |     |     |     |     |     |     |   |   |     |     |     |     |     |
|-----|-----|-----|---|-----|---|---|-----|-----|-----|-----|-----|-----|-----|---|---|-----|-----|-----|-----|-----|
| 193 | 4   | 3   |   | 2   |   |   | 3   | 3   | 2   | 4   | 4   | 1   | 4   |   |   | 2   | 2   | 1   | 4   | 3   |
| 194 | 3   | 4   |   | 3   |   |   | 2   | 4   | 3   | 2   | 4   | 2   | 4   |   |   | 4   | 2   | 2   | 4   | 3   |
| 195 | 3   | 4   |   | 2   |   |   | 4   | 3   | 4   | 3   | 1   | 2   | 4   |   |   | 3   | 4   | 3   | 4   | 3   |
| 196 | 3   | 3   |   | 3   |   |   | 1   | 3   | 4   | 3   | 3   | 2   | 4   |   |   | 3   | 4   | 2   | 4   | 4   |
| Jml | 677 | 570 | 0 | 578 | 0 | 0 | 535 | 582 | 553 | 643 | 588 | 520 | 602 | 0 | 0 | 624 | 671 | 555 | 624 | 588 |

### Data Entry Instumen Penelitian Kuisiioner Fasilitas Belajar

| No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | $\Sigma$ |
|-----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----------|
| 1   | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 |    | 2  | 3  | 2  | 2  | 2  | 3  | 36       |
| 2   | 4 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 2 |    | 2  | 3  | 2  | 2  | 2  | 2  | 34       |
| 3   | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |    | 2  | 2  | 3  | 2  | 2  | 2  | 36       |
| 4   | 2 | 3 | 3 | 4 | 2 | 2 | 2 | 3 | 2 |    | 2  | 2  | 2  | 2  | 2  | 3  | 36       |
| 5   | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 |    | 2  | 2  | 2  | 4  | 2  | 3  | 39       |
| 6   | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 |    | 2  | 3  | 3  | 4  | 3  | 2  | 42       |
| 7   | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 |    | 2  | 3  | 2  | 2  | 2  | 4  | 39       |
| 8   | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |    | 2  | 3  | 2  | 2  | 3  | 2  | 36       |
| 9   | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |    | 2  | 3  | 2  | 2  | 3  | 3  | 41       |
| 10  | 3 | 3 | 3 | 4 | 3 | 2 | 4 | 4 | 4 |    | 3  | 4  | 4  | 3  | 4  | 4  | 52       |
| 11  | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 4 | 3 |    | 2  | 3  | 2  | 4  | 2  | 2  | 40       |
| 12  | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 3 |    | 2  | 3  | 3  | 2  | 2  | 2  | 34       |
| 13  | 2 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 |    | 2  | 4  | 2  | 2  | 2  | 4  | 38       |
| 14  | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 4 |    | 4  | 4  | 3  | 3  | 4  | 4  | 54       |
| 15  | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 4 |    | 3  | 4  | 4  | 3  | 4  | 4  | 55       |
| 16  | 4 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 |    | 2  | 3  | 2  | 2  | 3  | 4  | 41       |
| 17  | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |    | 2  | 3  | 3  | 3  | 3  | 3  | 43       |
| 18  | 2 | 2 | 4 | 4 | 3 | 2 | 4 | 4 | 3 |    | 2  | 4  | 4  | 3  | 4  | 4  | 49       |
| 19  | 4 | 3 | 2 | 3 | 3 | 2 | 3 | 4 | 2 |    | 2  | 3  | 3  | 2  | 4  | 2  | 42       |
| 20  | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 |    | 2  | 2  | 2  | 2  | 2  | 2  | 34       |
| 21  | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 4 | 3 |    | 4  | 3  | 2  | 2  | 4  | 3  | 44       |
| 22  | 4 | 3 | 2 | 3 | 2 | 3 | 3 | 4 | 2 |    | 2  | 3  | 3  | 3  | 3  | 4  | 44       |
| 23  | 3 | 3 | 4 | 4 | 3 | 3 | 2 | 4 | 2 |    | 2  | 4  | 2  | 2  | 2  | 4  | 44       |
| 24  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 |    | 2  | 2  | 3  | 2  | 3  | 3  | 43       |
| 25  | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 |    | 2  | 4  | 2  | 2  | 4  | 2  | 51       |
| 26  | 3 | 3 | 3 | 2 | 4 | 3 | 4 | 4 | 3 |    | 2  | 3  | 2  | 3  | 4  | 4  | 47       |
| 27  | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 |    | 2  | 4  | 4  | 3  | 4  | 4  | 56       |
| 28  | 4 | 3 | 3 | 3 | 3 | 4 | 2 | 4 | 2 |    | 4  | 4  | 4  | 2  | 3  | 4  | 49       |
| 29  | 3 | 3 | 3 | 2 | 4 | 3 | 4 | 2 | 2 |    | 2  | 4  | 2  | 4  | 4  | 4  | 46       |
| 30  | 2 | 4 | 4 | 2 | 3 | 3 | 2 | 2 | 1 |    | 2  | 1  | 3  | 2  | 1  | 2  | 34       |
| 31  | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 1 |    | 3  | 2  | 3  | 1  | 4  | 2  | 37       |
| 32  | 3 | 4 | 2 | 1 | 3 | 3 | 2 | 3 | 1 |    | 3  | 1  | 2  | 1  | 2  | 2  | 33       |
| 33  | 2 | 4 | 2 | 2 | 4 | 3 | 2 | 3 | 1 |    | 2  | 1  | 3  | 1  | 4  | 2  | 36       |
| 34  | 1 | 4 | 4 | 1 | 3 | 2 | 1 | 4 | 1 |    | 2  | 1  | 1  | 4  | 4  | 1  | 34       |
| 35  | 1 | 3 | 3 | 3 | 3 | 3 | 1 | 3 | 1 |    | 2  | 1  | 2  | 2  | 2  | 1  | 31       |
| 36  | 2 | 4 | 3 | 2 | 3 | 3 | 2 | 3 | 1 |    | 1  | 2  | 2  | 2  | 3  | 1  | 34       |



|    |   |   |   |   |   |   |   |   |   |  |   |   |   |   |   |   |    |
|----|---|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|----|
| 37 | 2 | 4 | 2 | 3 | 2 | 3 | 2 | 3 | 1 |  | 1 | 1 | 2 | 2 | 3 | 1 | 32 |
| 38 | 2 | 4 | 3 | 2 | 3 | 3 | 2 | 4 | 2 |  | 4 | 1 | 3 | 2 | 4 | 1 | 40 |
| 39 | 2 | 4 | 4 | 2 | 3 | 2 | 3 | 4 | 1 |  | 3 | 2 | 4 | 1 | 4 | 2 | 41 |
| 40 | 4 | 4 | 4 | 2 | 3 | 3 | 2 | 2 | 1 |  | 2 | 2 | 2 | 1 | 4 | 1 | 37 |
| 41 | 1 | 4 | 2 | 2 | 1 | 2 | 1 | 2 | 1 |  | 2 | 1 | 1 | 1 | 4 | 1 | 26 |
| 42 | 3 | 3 | 3 | 1 | 2 | 3 | 2 | 3 | 1 |  | 4 | 1 | 2 | 2 | 4 | 1 | 35 |
| 43 | 1 | 3 | 3 | 2 | 3 | 3 | 1 | 2 | 1 |  | 1 | 1 | 1 | 1 | 2 | 1 | 26 |
| 44 | 2 | 4 | 4 | 2 | 4 | 4 | 1 | 4 | 4 |  | 4 | 4 | 4 | 4 | 4 | 4 | 53 |
| 45 | 2 | 4 | 3 | 3 | 3 | 3 | 2 | 4 | 1 |  | 2 | 1 | 2 | 4 | 3 | 2 | 39 |
| 46 | 4 | 4 | 4 | 3 | 4 | 3 | 2 | 4 | 2 |  | 3 | 2 | 4 | 2 | 4 | 4 | 49 |
| 47 | 2 | 4 | 3 | 2 | 3 | 4 | 2 | 4 | 1 |  | 3 | 2 | 2 | 2 | 3 | 1 | 38 |
| 48 | 2 | 4 | 2 | 3 | 3 | 3 | 2 | 4 | 1 |  | 2 | 2 | 2 | 2 | 4 | 2 | 38 |
| 49 | 1 | 4 | 4 | 2 | 4 | 4 | 2 | 3 | 1 |  | 2 | 2 | 2 | 4 | 2 | 1 | 38 |
| 50 | 3 | 4 | 2 | 4 | 3 | 3 | 1 | 3 | 2 |  | 3 | 3 | 4 | 2 | 3 | 1 | 41 |
| 51 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 1 |  | 3 | 3 | 3 | 1 | 4 | 1 | 46 |
| 52 | 1 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 1 |  | 3 | 1 | 3 | 2 | 3 | 1 | 34 |
| 53 | 1 | 4 | 3 | 2 | 3 | 2 | 2 | 3 | 1 |  | 2 | 3 | 3 | 2 | 4 | 2 | 37 |
| 54 | 3 | 4 | 4 | 3 | 2 | 4 | 2 | 4 | 1 |  | 3 | 1 | 4 | 1 | 4 | 4 | 44 |
| 55 | 2 | 4 | 4 | 3 | 2 | 4 | 1 | 3 | 1 |  | 2 | 1 | 3 | 2 | 4 | 1 | 37 |
| 56 | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 1 |  | 2 | 2 | 2 | 1 | 2 | 2 | 30 |
| 57 | 1 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 1 |  | 3 | 1 | 3 | 2 | 3 | 1 | 34 |
| 58 | 1 | 4 | 1 | 1 | 1 | 4 | 2 | 1 | 1 |  | 3 | 2 | 1 | 3 | 2 | 2 | 29 |
| 59 | 2 | 4 | 4 | 3 | 3 | 3 | 2 | 4 | 1 |  | 2 | 2 | 2 | 1 | 4 | 1 | 38 |
| 60 | 2 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 1 |  | 2 | 2 | 2 | 2 | 2 | 2 | 33 |
| 61 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 4 | 2 |  | 4 | 4 | 4 | 2 | 2 | 4 | 46 |
| 62 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |  | 3 | 4 | 4 | 4 | 4 | 4 | 59 |
| 63 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 |  | 3 | 3 | 4 | 3 | 3 | 3 | 47 |
| 64 | 3 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 2 |  | 2 | 3 | 4 | 2 | 2 | 2 | 46 |
| 65 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 2 | 2 |  | 3 | 3 | 2 | 3 | 2 | 2 | 41 |
| 66 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 3 |  | 2 | 4 | 2 | 2 | 4 | 4 | 41 |
| 67 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 |  | 2 | 3 | 2 | 2 | 2 | 2 | 47 |
| 68 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 |  | 2 | 3 | 3 | 3 | 3 | 3 | 37 |
| 69 | 2 | 4 | 4 | 2 | 3 | 4 | 4 | 3 | 3 |  | 4 | 3 | 3 | 3 | 3 | 2 | 47 |
| 70 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 1 |  | 4 | 2 | 1 | 4 | 4 | 2 | 44 |
| 71 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |  | 2 | 3 | 3 | 2 | 2 | 3 | 36 |
| 72 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 |  | 2 | 2 | 2 | 2 | 2 | 3 | 35 |
| 73 | 3 | 3 | 2 | 1 | 2 | 3 | 4 | 2 | 2 |  | 3 | 2 | 2 | 3 | 2 | 2 | 36 |
| 74 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 |  | 3 | 4 | 3 | 3 | 4 | 2 | 43 |
| 75 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 4 |  | 2 | 2 | 3 | 2 | 3 | 2 | 39 |

|     |   |   |   |   |   |   |   |   |   |  |   |   |   |   |   |   |    |
|-----|---|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|----|
| 76  | 3 | 4 | 4 | 2 | 3 | 3 | 2 | 3 | 2 |  | 3 | 3 | 4 | 3 | 2 | 4 | 45 |
| 77  | 3 | 1 | 2 | 3 | 2 | 3 | 4 | 3 | 3 |  | 3 | 4 | 3 | 3 | 3 | 2 | 42 |
| 78  | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 3 |  | 3 | 3 | 4 | 3 | 4 | 4 | 52 |
| 79  | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 |  | 2 | 2 | 2 | 2 | 2 | 2 | 37 |
| 80  | 2 | 2 | 4 | 4 | 3 | 2 | 2 | 3 | 2 |  | 3 | 2 | 2 | 1 | 3 | 3 | 38 |
| 81  | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 4 | 2 |  | 2 | 4 | 2 | 3 | 1 | 4 | 39 |
| 82  | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |  | 2 | 3 | 2 | 2 | 2 | 2 | 33 |
| 83  | 4 | 4 | 4 | 4 | 2 | 3 | 2 | 2 | 2 |  | 2 | 4 | 2 | 4 | 2 | 4 | 45 |
| 84  | 4 | 4 | 4 | 4 | 2 | 3 | 3 | 2 | 2 |  | 3 | 2 | 2 | 4 | 4 | 2 | 45 |
| 85  | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 |  | 2 | 2 | 2 | 2 | 2 | 3 | 35 |
| 86  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |  | 2 | 3 | 3 | 4 | 2 | 3 | 43 |
| 87  | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 2 | 3 |  | 3 | 3 | 3 | 2 | 4 | 3 | 44 |
| 88  | 2 | 4 | 2 | 4 | 4 | 4 | 4 | 3 | 3 |  | 3 | 4 | 2 | 2 | 4 | 4 | 49 |
| 89  | 4 | 4 | 4 | 4 | 2 | 3 | 2 | 3 | 3 |  | 2 | 3 | 2 | 3 | 2 | 3 | 44 |
| 90  | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 3 | 2 |  | 2 | 2 | 2 | 2 | 2 | 4 | 32 |
| 91  | 3 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 2 |  | 2 | 3 | 3 | 4 | 2 | 3 | 46 |
| 92  | 4 | 4 | 4 | 1 | 1 | 4 | 3 | 1 | 2 |  | 4 | 1 | 2 | 1 | 4 | 1 | 37 |
| 93  | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 |  | 2 | 2 | 2 | 2 | 2 | 2 | 33 |
| 94  | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 |  | 3 | 4 | 4 | 3 | 2 | 4 | 50 |
| 95  | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 |  | 2 | 3 | 3 | 2 | 2 | 2 | 37 |
| 96  | 2 | 4 | 4 | 3 | 3 | 4 | 2 | 1 | 2 |  | 2 | 3 | 2 | 2 | 3 | 3 | 40 |
| 97  | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 |  | 2 | 2 | 2 | 2 | 3 | 3 | 35 |
| 98  | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 4 | 2 |  | 3 | 2 | 4 | 2 | 2 | 4 | 42 |
| 99  | 2 | 3 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |  | 2 | 2 | 2 | 2 | 2 | 2 | 30 |
| 100 | 2 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 2 |  | 3 | 2 | 3 | 4 | 4 | 4 | 48 |
| 101 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 |  | 4 | 4 | 2 | 3 | 3 | 2 | 50 |
| 102 | 3 | 4 | 4 | 2 | 1 | 3 | 2 | 2 | 3 |  | 2 | 2 | 2 | 3 | 3 | 2 | 38 |
| 103 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |  | 2 | 4 | 2 | 2 | 2 | 1 | 32 |
| 104 | 3 | 4 | 3 | 4 | 3 | 3 | 4 | 3 | 2 |  | 2 | 3 | 2 | 3 | 4 | 4 | 47 |
| 105 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 |  | 2 | 4 | 4 | 2 | 3 | 4 | 43 |
| 106 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 4 | 2 |  | 2 | 4 | 2 | 3 | 2 | 2 | 39 |
| 107 | 2 | 1 | 1 | 2 | 2 | 4 | 2 | 2 | 2 |  | 1 | 2 | 2 | 3 | 2 | 1 | 29 |
| 108 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 |  | 2 | 2 | 2 | 2 | 2 | 2 | 31 |
| 109 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 4 | 2 |  | 2 | 4 | 2 | 2 | 2 | 4 | 43 |
| 110 | 2 | 3 | 4 | 2 | 2 | 2 | 2 | 2 | 3 |  | 3 | 3 | 3 | 3 | 2 | 1 | 37 |
| 111 | 3 | 4 | 3 | 4 | 2 | 4 | 2 | 4 | 2 |  | 2 | 4 | 4 | 3 | 3 | 4 | 48 |
| 112 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 3 |  | 1 | 2 | 3 | 2 | 2 | 4 | 37 |
| 113 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 1 | 2 |  | 2 | 2 | 2 | 2 | 2 | 3 | 35 |
| 114 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 |  | 2 | 2 | 2 | 2 | 2 | 2 | 34 |

|     |   |   |   |   |   |   |   |   |   |  |   |   |   |   |   |   |    |
|-----|---|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|----|
| 115 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 |  | 2 | 2 | 2 | 2 | 2 | 2 | 32 |
| 116 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 4 | 4 |  | 2 | 3 | 4 | 2 | 2 | 1 | 40 |
| 117 | 4 | 2 | 3 | 3 | 3 | 4 | 2 | 4 | 3 |  | 4 | 2 | 4 | 3 | 2 | 3 | 46 |
| 118 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2 |  | 2 | 3 | 3 | 2 | 2 | 2 | 37 |
| 119 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 1 |  | 1 | 2 | 1 | 2 | 1 | 1 | 23 |
| 120 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 |  | 2 | 3 | 2 | 3 | 3 | 2 | 38 |
| 121 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 |  | 3 | 3 | 3 | 3 | 2 | 3 | 40 |
| 122 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 |  | 2 | 2 | 2 | 2 | 2 | 2 | 33 |
| 123 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 |  | 3 | 4 | 4 | 4 | 4 | 3 | 43 |
| 124 | 2 | 3 | 4 | 2 | 3 | 2 | 2 | 2 | 2 |  | 2 | 3 | 2 | 3 | 3 | 4 | 39 |
| 125 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |  | 2 | 3 | 4 | 2 | 2 | 4 | 40 |
| 126 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 |  | 4 | 3 | 3 | 3 | 3 | 2 | 43 |
| 127 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 |  | 3 | 3 | 4 | 4 | 4 | 2 | 44 |
| 128 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |  | 2 | 1 | 2 | 2 | 2 | 2 | 30 |
| 129 | 3 | 3 | 3 | 3 | 2 | 4 | 4 | 3 | 2 |  | 2 | 2 | 2 | 2 | 2 | 2 | 39 |
| 130 | 2 | 3 | 4 | 2 | 3 | 3 | 4 | 3 | 3 |  | 2 | 4 | 4 | 3 | 4 | 3 | 47 |
| 131 | 4 | 2 | 1 | 2 | 3 | 4 | 2 | 4 | 1 |  | 4 | 1 | 4 | 3 | 2 | 4 | 41 |
| 132 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 |  | 2 | 3 | 3 | 2 | 2 | 3 | 37 |
| 133 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |  | 2 | 3 | 3 | 3 | 3 | 2 | 42 |
| 134 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |  | 3 | 2 | 4 | 3 | 2 | 4 | 38 |
| 135 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |  | 1 | 1 | 1 | 4 | 1 | 2 | 23 |
| 136 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 |  | 2 | 3 | 2 | 3 | 2 | 3 | 39 |
| 137 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 |  | 2 | 2 | 2 | 2 | 2 | 2 | 33 |
| 138 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 |  | 2 | 2 | 2 | 3 | 3 | 3 | 36 |
| 139 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 2 |  | 3 | 2 | 2 | 3 | 2 | 2 | 37 |
| 140 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 |  | 3 | 2 | 2 | 3 | 3 | 2 | 38 |
| 141 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 |  | 2 | 2 | 3 | 4 | 2 | 2 | 38 |
| 142 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 3 |  | 2 | 2 | 2 | 3 | 3 | 2 | 37 |
| 143 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |  | 3 | 3 | 3 | 4 | 3 | 2 | 46 |
| 144 | 2 | 4 | 4 | 2 | 4 | 4 | 2 | 4 | 3 |  | 3 | 4 | 4 | 2 | 3 | 2 | 47 |
| 145 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |  | 2 | 3 | 3 | 3 | 2 | 3 | 44 |
| 146 | 3 | 4 | 3 | 3 | 3 | 2 | 2 | 3 | 2 |  | 2 | 3 | 2 | 3 | 2 | 4 | 41 |
| 147 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 |  | 3 | 2 | 2 | 2 | 3 | 2 | 38 |
| 148 | 3 | 3 | 3 | 3 | 4 | 3 | 2 | 2 | 2 |  | 2 | 4 | 4 | 2 | 4 | 4 | 45 |
| 149 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |  | 3 | 2 | 1 | 3 | 2 | 3 | 38 |
| 150 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 |  | 2 | 3 | 3 | 2 | 2 | 3 | 37 |
| 151 | 2 | 3 | 2 | 2 | 4 | 3 | 4 | 3 | 2 |  | 1 | 4 | 2 | 3 | 3 | 4 | 42 |
| 152 | 3 | 3 | 3 | 3 | 4 | 2 | 3 | 4 | 2 |  | 3 | 3 | 3 | 3 | 3 | 2 | 44 |
| 153 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 3 |  | 2 | 2 | 2 | 4 | 3 | 3 | 38 |

|     |   |   |   |   |   |   |   |   |   |  |   |   |   |   |   |   |    |
|-----|---|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|----|
| 154 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 1 |  | 1 | 1 | 1 | 1 | 1 | 4 | 30 |
| 155 | 3 | 3 | 3 | 4 | 3 | 2 | 3 | 2 | 3 |  | 3 | 3 | 2 | 4 | 3 | 3 | 44 |
| 156 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 3 |  | 1 | 2 | 2 | 2 | 1 | 1 | 25 |
| 157 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 4 |  | 2 | 4 | 1 | 4 | 4 | 3 | 43 |
| 158 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 4 | 1 |  | 1 | 2 | 1 | 2 | 4 | 3 | 37 |
| 159 | 2 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 4 |  | 3 | 2 | 2 | 3 | 3 | 4 | 45 |
| 160 | 2 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 3 |  | 2 | 3 | 2 | 2 | 4 | 4 | 45 |
| 161 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |  | 2 | 3 | 2 | 2 | 2 | 3 | 39 |
| 162 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |  | 2 | 3 | 2 | 3 | 2 | 2 | 37 |
| 163 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 |  | 1 | 2 | 2 | 3 | 2 | 3 | 33 |
| 164 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |  | 1 | 1 | 2 | 2 | 2 | 2 | 31 |
| 165 | 4 | 3 | 4 | 4 | 2 | 3 | 4 | 4 | 3 |  | 2 | 4 | 3 | 4 | 2 | 2 | 48 |
| 166 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 |  | 4 | 3 | 4 | 3 | 4 | 3 | 54 |
| 167 | 1 | 3 | 2 | 2 | 2 | 4 | 3 | 2 | 3 |  | 2 | 3 | 2 | 2 | 2 | 1 | 34 |
| 168 | 2 | 4 | 3 | 2 | 3 | 3 | 4 | 2 | 2 |  | 2 | 2 | 2 | 2 | 2 | 1 | 36 |
| 169 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 2 |  | 2 | 2 | 3 | 2 | 4 | 1 | 43 |
| 170 | 1 | 4 | 2 | 1 | 2 | 3 | 3 | 2 | 3 |  | 1 | 2 | 1 | 4 | 2 | 1 | 32 |
| 171 | 2 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 2 |  | 3 | 2 | 2 | 4 | 2 | 4 | 45 |
| 172 | 3 | 2 | 4 | 2 | 3 | 2 | 4 | 3 | 3 |  | 3 | 3 | 1 | 1 | 2 | 1 | 37 |
| 173 | 3 | 3 | 4 | 3 | 2 | 4 | 3 | 3 | 4 |  | 3 | 4 | 2 | 2 | 4 | 4 | 48 |
| 174 | 4 | 4 | 3 | 2 | 2 | 3 | 3 | 4 | 3 |  | 4 | 3 | 3 | 3 | 4 | 4 | 49 |
| 175 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 |  | 4 | 3 | 3 | 4 | 4 | 4 | 55 |
| 176 | 1 | 4 | 4 | 2 | 2 | 3 | 1 | 2 | 2 |  | 2 | 1 | 2 | 2 | 2 | 2 | 32 |
| 177 | 1 | 4 | 2 | 2 | 2 | 1 | 3 | 2 | 2 |  | 2 | 2 | 1 | 1 | 2 | 1 | 28 |
| 178 | 1 | 4 | 3 | 2 | 2 | 3 | 4 | 3 | 2 |  | 2 | 3 | 2 | 4 | 2 | 1 | 38 |
| 179 | 1 | 4 | 4 | 2 | 3 | 4 | 4 | 3 | 4 |  | 3 | 3 | 1 | 2 | 2 | 1 | 41 |
| 180 | 3 | 3 | 4 | 2 | 3 | 4 | 3 | 3 | 2 |  | 4 | 4 | 2 | 4 | 4 | 1 | 46 |
| 181 | 4 | 4 | 4 | 3 | 2 | 4 | 3 | 3 | 4 |  | 3 | 3 | 2 | 2 | 4 | 4 | 49 |
| 182 | 4 | 4 | 4 | 2 | 4 | 3 | 4 | 4 | 1 |  | 4 | 4 | 3 | 4 | 4 | 4 | 53 |
| 183 | 2 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 2 |  | 2 | 3 | 4 | 2 | 4 | 2 | 46 |
| 184 | 3 | 3 | 4 | 2 | 3 | 3 | 2 | 2 | 2 |  | 2 | 3 | 2 | 3 | 3 | 1 | 38 |
| 185 | 2 | 4 | 3 | 4 | 3 | 4 | 3 | 3 | 2 |  | 4 | 2 | 2 | 2 | 3 | 4 | 45 |
| 186 | 3 | 4 | 3 | 2 | 3 | 3 | 4 | 2 | 2 |  | 3 | 4 | 1 | 1 | 1 | 4 | 40 |
| 187 | 3 | 4 | 1 | 2 | 1 | 3 | 2 | 1 | 3 |  | 2 | 2 | 2 | 3 | 1 | 2 | 32 |
| 188 | 3 | 3 | 1 | 3 | 1 | 2 | 3 | 1 | 3 |  | 3 | 2 | 2 | 4 | 2 | 1 | 34 |
| 189 | 4 | 3 | 1 | 2 | 1 | 2 | 3 | 2 | 3 |  | 3 | 2 | 1 | 3 | 2 | 2 | 34 |
| 190 | 1 | 3 | 1 | 1 | 3 | 2 | 2 | 1 | 3 |  | 2 | 2 | 2 | 3 | 1 | 2 | 29 |
| 191 | 4 | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 3 |  | 3 | 2 | 2 | 3 | 2 | 2 | 37 |
| 192 | 4 | 4 | 3 | 2 | 4 | 2 | 2 | 1 | 3 |  | 4 | 2 | 3 | 4 | 2 | 4 | 44 |

|            |            |            |            |            |            |            |            |            |            |          |            |            |            |            |            |            |             |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|----------|------------|------------|------------|------------|------------|------------|-------------|
| <b>193</b> | 2          | 4          | 2          | 4          | 4          | 3          | 3          | 3          | 3          |          | 2          | 2          | 2          | 1          | 3          | 2          | 40          |
| <b>194</b> | 4          | 4          | 2          | 4          | 2          | 1          | 4          | 2          | 4          |          | 4          | 1          | 2          | 3          | 4          | 2          | 43          |
| <b>195</b> | 4          | 2          | 3          | 3          | 3          | 2          | 4          | 2          | 2          |          | 3          | 2          | 2          | 3          | 2          | 3          | 40          |
| <b>196</b> | 4          | 4          | 1          | 4          | 4          | 1          | 2          | 4          | 4          |          | 4          | 1          | 2          | 2          | 2          | 2          | 41          |
| <b>Jml</b> | <b>518</b> | <b>612</b> | <b>565</b> | <b>522</b> | <b>526</b> | <b>553</b> | <b>511</b> | <b>560</b> | <b>453</b> | <b>0</b> | <b>476</b> | <b>507</b> | <b>485</b> | <b>497</b> | <b>536</b> | <b>499</b> | <b>7820</b> |

### Data Entry Instrumen Penelitian Kuesioner Kualitas Pembelajaran

| No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | $\Sigma$ |
|-----|---|---|---|---|---|---|---|---|---|----|----|----|----------|
| 1   | 4 | 4 | 3 | 4 | 4 | 4 | 2 | 4 | 4 | 2  |    | 4  | 39       |
| 2   | 3 | 4 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3  |    | 2  | 31       |
| 3   | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 4  |    | 3  | 34       |
| 4   | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4  |    | 3  | 37       |
| 5   | 2 | 4 | 4 | 2 | 3 | 2 | 2 | 2 | 3 | 2  |    | 3  | 29       |
| 6   | 4 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2  |    | 3  | 29       |
| 7   | 3 | 3 | 3 | 4 | 4 | 4 | 2 | 3 | 3 | 2  |    | 3  | 34       |
| 8   | 3 | 4 | 4 | 3 | 3 | 4 | 2 | 3 | 4 | 3  |    | 3  | 36       |
| 9   | 3 | 3 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 2  |    | 3  | 37       |
| 10  | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 2  |    | 4  | 38       |
| 11  | 4 | 4 | 3 | 3 | 2 | 2 | 3 | 4 | 3 | 3  |    | 3  | 34       |
| 12  | 3 | 3 | 2 | 3 | 4 | 3 | 2 | 3 | 4 | 2  |    | 4  | 33       |
| 13  | 4 | 4 | 2 | 4 | 4 | 4 | 3 | 2 | 4 | 2  |    | 3  | 36       |
| 14  | 3 | 3 | 4 | 2 | 4 | 2 | 2 | 4 | 4 | 2  |    | 4  | 34       |
| 15  | 3 | 4 | 4 | 3 | 3 | 3 | 2 | 3 | 3 | 2  |    | 3  | 33       |
| 16  | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4  |    | 3  | 35       |
| 17  | 4 | 3 | 4 | 2 | 3 | 2 | 2 | 4 | 4 | 3  |    | 2  | 33       |
| 18  | 3 | 3 | 4 | 3 | 3 | 3 | 2 | 3 | 4 | 2  |    | 4  | 34       |
| 19  | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2  |    | 3  | 33       |
| 20  | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 4 | 3 | 3  |    | 2  | 31       |
| 21  | 3 | 4 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3  |    | 3  | 32       |
| 22  | 3 | 3 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 3  |    | 2  | 27       |
| 23  | 4 | 4 | 3 | 2 | 3 | 4 | 3 | 4 | 4 | 3  |    | 3  | 37       |
| 24  | 3 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 3 | 2  |    | 3  | 32       |
| 25  | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2  |    | 2  | 25       |
| 26  | 2 | 3 | 4 | 2 | 2 | 3 | 2 | 3 | 4 | 4  |    | 2  | 31       |
| 27  | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 4  |    | 3  | 31       |
| 28  | 3 | 4 | 4 | 3 | 3 | 4 | 2 | 4 | 3 | 4  |    | 3  | 37       |
| 29  | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 4 | 2 | 3  |    | 2  | 30       |
| 30  | 4 | 4 | 1 | 2 | 1 | 2 | 2 | 3 | 2 | 3  |    | 3  | 27       |
| 31  | 1 | 3 | 1 | 2 | 2 | 4 | 1 | 2 | 2 | 2  |    | 2  | 22       |
| 32  | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2  |    | 2  | 33       |
| 33  | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4  |    | 3  | 39       |
| 34  | 4 | 3 | 2 | 3 | 4 | 2 | 3 | 3 | 2 | 1  |    | 2  | 29       |
| 35  | 3 | 4 | 3 | 2 | 2 | 2 | 4 | 2 | 3 | 2  |    | 3  | 30       |
| 36  | 4 | 3 | 4 | 4 | 4 | 1 | 2 | 1 | 3 | 4  |    | 2  | 32       |

|    |   |   |   |   |   |   |   |   |   |   |  |   |    |
|----|---|---|---|---|---|---|---|---|---|---|--|---|----|
| 37 | 2 | 2 | 4 | 4 | 3 | 3 | 1 | 2 | 4 | 2 |  | 2 | 29 |
| 38 | 3 | 3 | 4 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |  | 4 | 29 |
| 39 | 3 | 4 | 4 | 2 | 4 | 2 | 3 | 4 | 2 | 4 |  | 2 | 34 |
| 40 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 4 |  | 4 | 41 |
| 41 | 3 | 3 | 2 | 3 | 2 | 2 | 4 | 2 | 4 | 4 |  | 3 | 32 |
| 42 | 3 | 4 | 2 | 3 | 4 | 4 | 3 | 4 | 4 | 4 |  | 2 | 37 |
| 43 | 3 | 3 | 3 | 2 | 3 | 3 | 4 | 3 | 3 | 2 |  | 2 | 31 |
| 44 | 3 | 4 | 4 | 2 | 2 | 3 | 2 | 4 | 3 | 2 |  | 3 | 32 |
| 45 | 4 | 3 | 4 | 3 | 3 | 3 | 2 | 2 | 3 | 2 |  | 3 | 32 |
| 46 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 2 |  | 2 | 33 |
| 47 | 2 | 4 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 2 |  | 2 | 28 |
| 48 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 |  | 2 | 33 |
| 49 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 3 | 2 |  | 4 | 32 |
| 50 | 2 | 3 | 4 | 2 | 4 | 3 | 2 | 2 | 3 | 2 |  | 2 | 29 |
| 51 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 2 |  | 2 | 32 |
| 52 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 3 |  | 4 | 38 |
| 53 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 3 |  | 2 | 29 |
| 54 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 3 |  | 3 | 36 |
| 55 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 3 | 2 |  | 3 | 36 |
| 56 | 2 | 2 | 4 | 3 | 3 | 3 | 1 | 3 | 3 | 3 |  | 2 | 29 |
| 57 | 2 | 3 | 3 | 2 | 3 | 3 | 4 | 3 | 2 | 2 |  | 2 | 29 |
| 58 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 2 | 4 | 3 |  | 3 | 30 |
| 59 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 2 | 3 | 4 |  | 3 | 36 |
| 60 | 3 | 4 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 |  | 2 | 27 |
| 61 | 3 | 3 | 3 | 2 | 3 | 3 | 4 | 3 | 3 | 3 |  | 3 | 33 |
| 62 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 4 |  | 2 | 31 |
| 63 | 3 | 4 | 4 | 3 | 4 | 3 | 2 | 2 | 3 | 3 |  | 3 | 34 |
| 64 | 4 | 4 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 |  | 4 | 34 |
| 65 | 3 | 3 | 2 | 4 | 4 | 3 | 3 | 4 | 4 | 2 |  | 4 | 36 |
| 66 | 4 | 4 | 4 | 3 | 4 | 2 | 2 | 3 | 3 | 2 |  | 2 | 33 |
| 67 | 3 | 3 | 3 | 2 | 3 | 4 | 2 | 4 | 3 | 2 |  | 2 | 31 |
| 68 | 3 | 4 | 4 | 3 | 3 | 4 | 2 | 4 | 3 | 2 |  | 4 | 36 |
| 69 | 3 | 4 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 4 |  | 4 | 34 |
| 70 | 3 | 4 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 2 |  | 2 | 28 |
| 71 | 4 | 3 | 3 | 4 | 2 | 4 | 3 | 2 | 2 | 4 |  | 3 | 34 |
| 72 | 3 | 4 | 3 | 2 | 4 | 4 | 2 | 4 | 4 | 2 |  | 3 | 35 |
| 73 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 |  | 2 | 29 |
| 74 | 3 | 4 | 4 | 2 | 3 | 3 | 2 | 2 | 3 | 2 |  | 2 | 30 |
| 75 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |  | 3 | 32 |

|     |   |   |   |   |   |   |   |   |   |   |  |   |    |
|-----|---|---|---|---|---|---|---|---|---|---|--|---|----|
| 76  | 2 | 4 | 4 | 3 | 2 | 2 | 4 | 3 | 2 | 3 |  | 2 | 31 |
| 77  | 4 | 3 | 3 | 4 | 3 | 3 | 2 | 4 | 3 | 3 |  | 4 | 36 |
| 78  | 3 | 4 | 4 | 3 | 3 | 4 | 2 | 3 | 3 | 4 |  | 3 | 36 |
| 79  | 3 | 4 | 4 | 2 | 4 | 2 | 2 | 3 | 3 | 3 |  | 3 | 33 |
| 80  | 2 | 3 | 4 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |  | 3 | 31 |
| 81  | 3 | 3 | 3 | 2 | 3 | 4 | 2 | 4 | 3 | 2 |  | 2 | 31 |
| 82  | 4 | 3 | 3 | 3 | 4 | 4 | 2 | 3 | 4 | 2 |  | 3 | 35 |
| 83  | 4 | 3 | 4 | 2 | 3 | 3 | 2 | 3 | 3 | 2 |  | 3 | 32 |
| 84  | 3 | 2 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | 4 |  | 2 | 31 |
| 85  | 4 | 3 | 4 | 2 | 4 | 2 | 3 | 3 | 3 | 3 |  | 2 | 33 |
| 86  | 4 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 4 | 2 |  | 2 | 30 |
| 87  | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 4 |  | 2 | 31 |
| 88  | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 |  | 4 | 41 |
| 89  | 4 | 3 | 3 | 3 | 2 | 4 | 3 | 3 | 4 | 4 |  | 3 | 36 |
| 90  | 4 | 3 | 3 | 3 | 3 | 2 | 3 | 4 | 4 | 2 |  | 3 | 34 |
| 91  | 4 | 4 | 4 | 3 | 3 | 2 | 2 | 4 | 3 | 4 |  | 4 | 37 |
| 92  | 3 | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |  | 3 | 29 |
| 93  | 3 | 4 | 4 | 2 | 3 | 3 | 4 | 2 | 3 | 3 |  | 3 | 34 |
| 94  | 2 | 3 | 4 | 2 | 4 | 2 | 4 | 2 | 4 | 3 |  | 3 | 33 |
| 95  | 2 | 4 | 2 | 3 | 3 | 2 | 2 | 4 | 4 | 4 |  | 2 | 32 |
| 96  | 3 | 4 | 4 | 2 | 2 | 4 | 3 | 2 | 3 | 4 |  | 2 | 33 |
| 97  | 4 | 4 | 3 | 2 | 4 | 2 | 3 | 4 | 4 | 3 |  | 2 | 35 |
| 98  | 4 | 4 | 4 | 3 | 2 | 2 | 3 | 4 | 3 | 4 |  | 3 | 36 |
| 99  | 4 | 3 | 1 | 4 | 2 | 4 | 2 | 3 | 3 | 1 |  | 4 | 31 |
| 100 | 3 | 4 | 4 | 4 | 2 | 3 | 3 | 4 | 2 | 4 |  | 4 | 37 |
| 101 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 |  | 3 | 27 |
| 102 | 3 | 3 | 4 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |  | 4 | 34 |
| 103 | 2 | 3 | 2 | 3 | 4 | 4 | 3 | 3 | 2 | 2 |  | 3 | 31 |
| 104 | 3 | 4 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 4 |  | 3 | 31 |
| 105 | 3 | 4 | 3 | 4 | 2 | 2 | 2 | 2 | 3 | 4 |  | 3 | 32 |
| 106 | 3 | 2 | 3 | 3 | 3 | 2 | 4 | 2 | 3 | 2 |  | 2 | 29 |
| 107 | 4 | 4 | 3 | 2 | 3 | 3 | 2 | 2 | 4 | 4 |  | 4 | 35 |
| 108 | 2 | 3 | 3 | 4 | 3 | 2 | 2 | 3 | 4 | 3 |  | 2 | 31 |
| 109 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 4 | 3 | 1 |  | 3 | 29 |
| 110 | 3 | 3 | 3 | 2 | 2 | 2 | 4 | 3 | 2 | 3 |  | 2 | 29 |
| 111 | 4 | 3 | 2 | 4 | 4 | 3 | 2 | 3 | 3 | 3 |  | 3 | 34 |
| 112 | 4 | 3 | 2 | 2 | 3 | 3 | 4 | 3 | 3 | 3 |  | 3 | 33 |
| 113 | 3 | 4 | 4 | 3 | 4 | 3 | 2 | 3 | 2 | 2 |  | 3 | 33 |
| 114 | 3 | 1 | 1 | 3 | 4 | 3 | 2 | 2 | 4 | 2 |  | 3 | 28 |



|     |   |   |   |   |   |   |   |   |   |   |  |   |    |
|-----|---|---|---|---|---|---|---|---|---|---|--|---|----|
| 115 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 4 | 2 | 2 |  | 2 | 23 |
| 116 | 3 | 2 | 2 | 2 | 3 | 4 | 4 | 2 | 3 | 3 |  | 4 | 32 |
| 117 | 2 | 2 | 2 | 4 | 3 | 3 | 2 | 3 | 2 | 1 |  | 4 | 28 |
| 118 | 2 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | 4 |  | 2 | 31 |
| 119 | 2 | 3 | 4 | 2 | 2 | 2 | 1 | 2 | 2 | 3 |  | 2 | 25 |
| 120 | 3 | 3 | 4 | 2 | 3 | 3 | 2 | 3 | 3 | 3 |  | 3 | 32 |
| 121 | 4 | 1 | 4 | 2 | 2 | 4 | 3 | 2 | 2 | 2 |  | 3 | 29 |
| 122 | 3 | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 |  | 3 | 30 |
| 123 | 3 | 4 | 2 | 3 | 3 | 2 | 2 | 4 | 2 | 3 |  | 2 | 30 |
| 124 | 3 | 4 | 2 | 2 | 3 | 4 | 2 | 3 | 2 | 3 |  | 2 | 30 |
| 125 | 4 | 4 | 3 | 4 | 4 | 4 | 2 | 3 | 4 | 3 |  | 2 | 37 |
| 126 | 1 | 2 | 3 | 1 | 1 | 1 | 3 | 2 | 1 | 3 |  | 2 | 20 |
| 127 | 1 | 4 | 1 | 1 | 1 | 2 | 1 | 3 | 2 | 2 |  | 2 | 20 |
| 128 | 1 | 3 | 2 | 1 | 2 | 2 | 4 | 2 | 1 | 3 |  | 2 | 23 |
| 129 | 1 | 4 | 2 | 1 | 2 | 3 | 2 | 4 | 1 | 3 |  | 3 | 26 |
| 130 | 1 | 3 | 4 | 1 | 1 | 2 | 2 | 3 | 1 | 2 |  | 3 | 23 |
| 131 | 2 | 4 | 2 | 1 | 3 | 2 | 4 | 4 | 1 | 4 |  | 3 | 30 |
| 132 | 0 | 2 | 3 | 1 | 3 | 2 | 2 | 4 | 0 | 2 |  | 3 | 22 |
| 133 | 2 | 3 | 2 | 1 | 2 | 2 | 3 | 1 | 1 | 3 |  | 3 | 23 |
| 134 | 2 | 3 | 3 | 2 | 2 | 4 | 3 | 3 | 3 | 4 |  | 3 | 32 |
| 135 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 1 | 2 |  | 4 | 35 |
| 136 | 2 | 4 | 2 | 1 | 3 | 2 | 3 | 3 | 1 | 3 |  | 4 | 28 |
| 137 | 2 | 4 | 4 | 1 | 2 | 3 | 3 | 4 | 1 | 2 |  | 3 | 29 |
| 138 | 2 | 4 | 4 | 2 | 3 | 2 | 2 | 4 | 2 | 2 |  | 4 | 31 |
| 139 | 2 | 4 | 4 | 3 | 3 | 3 | 4 | 2 | 2 | 4 |  | 3 | 34 |
| 140 | 2 | 3 | 4 | 2 | 4 | 2 | 4 | 3 | 2 | 4 |  | 3 | 33 |
| 141 | 1 | 2 | 4 | 1 | 2 | 3 | 3 | 2 | 1 | 3 |  | 3 | 25 |
| 142 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 4 | 2 | 3 |  | 4 | 28 |
| 143 | 3 | 4 | 3 | 2 | 2 | 3 | 3 | 3 | 1 | 2 |  | 3 | 29 |
| 144 | 1 | 4 | 2 | 2 | 2 | 4 | 3 | 3 | 2 | 4 |  | 3 | 30 |
| 145 | 3 | 4 | 3 | 2 | 3 | 4 | 2 | 2 | 3 | 3 |  | 2 | 31 |
| 146 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 2 |  | 3 | 24 |
| 147 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 4 | 2 | 3 |  | 4 | 31 |
| 148 | 4 | 4 | 4 | 2 | 3 | 4 | 4 | 4 | 4 | 4 |  | 4 | 41 |
| 149 | 2 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 2 | 2 |  | 2 | 32 |
| 150 | 1 | 2 | 2 | 1 | 3 | 2 | 2 | 4 | 1 | 2 |  | 4 | 24 |
| 151 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 4 | 0 | 3 |  | 4 | 32 |
| 152 | 2 | 3 | 2 | 2 | 3 | 4 | 3 | 4 | 3 | 2 |  | 4 | 32 |
| 153 | 2 | 4 | 4 | 1 | 2 | 2 | 3 | 3 | 1 | 4 |  | 3 | 29 |

|     |   |   |   |   |   |   |   |   |   |   |  |   |    |
|-----|---|---|---|---|---|---|---|---|---|---|--|---|----|
| 154 | 1 | 2 | 3 | 1 | 1 | 3 | 2 | 3 | 1 | 3 |  | 2 | 22 |
| 155 | 3 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 1 | 4 |  | 2 | 27 |
| 156 | 2 | 4 | 2 | 1 | 1 | 2 | 4 | 2 | 3 | 3 |  | 4 | 28 |
| 157 | 3 | 3 | 4 | 2 | 2 | 3 | 2 | 2 | 1 | 2 |  | 2 | 26 |
| 158 | 3 | 3 | 3 | 2 | 4 | 2 | 2 | 2 | 1 | 3 |  | 2 | 27 |
| 159 | 4 | 4 | 3 | 2 | 2 | 4 | 3 | 3 | 1 | 2 |  | 3 | 31 |
| 160 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 4 | 3 | 3 |  | 4 | 33 |
| 161 | 4 | 4 | 4 | 3 | 3 | 2 | 3 | 4 | 1 | 3 |  | 2 | 33 |
| 162 | 3 | 3 | 4 | 2 | 3 | 2 | 2 | 1 | 1 | 2 |  | 4 | 27 |
| 163 | 3 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 3 |  | 4 | 38 |
| 164 | 3 | 3 | 2 | 3 | 3 | 3 | 4 | 3 | 2 | 1 |  | 2 | 29 |
| 165 | 3 | 3 | 3 | 4 | 3 | 2 | 2 | 2 | 2 | 2 |  | 3 | 29 |
| 166 | 4 | 4 | 2 | 2 | 3 | 4 | 3 | 2 | 2 | 2 |  | 2 | 30 |
| 167 | 3 | 4 | 0 | 1 | 1 | 2 | 2 | 1 | 1 | 3 |  | 2 | 20 |
| 168 | 2 | 4 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 |  | 2 | 22 |
| 169 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 1 | 3 |  | 3 | 28 |
| 170 | 2 | 4 | 2 | 2 | 3 | 2 | 4 | 2 | 1 | 3 |  | 3 | 28 |
| 171 | 3 | 3 | 2 | 3 | 2 | 1 | 1 | 3 | 1 | 3 |  | 2 | 24 |
| 172 | 3 | 4 | 4 | 3 | 2 | 1 | 2 | 2 | 1 | 4 |  | 3 | 29 |
| 173 | 2 | 2 | 3 | 3 | 4 | 3 | 2 | 4 | 2 | 2 |  | 2 | 29 |
| 174 | 3 | 4 | 3 | 4 | 2 | 1 | 4 | 2 | 1 | 4 |  | 2 | 30 |
| 175 | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |  | 2 | 29 |
| 176 | 2 | 4 | 3 | 2 | 3 | 4 | 3 | 4 | 3 | 3 |  | 4 | 35 |
| 177 | 4 | 4 | 2 | 2 | 4 | 4 | 2 | 4 | 1 | 2 |  | 4 | 33 |
| 178 | 3 | 3 | 2 | 2 | 4 | 4 | 1 | 3 | 2 | 2 |  | 3 | 29 |
| 179 | 4 | 4 | 3 | 4 | 4 | 3 | 2 | 3 | 1 | 3 |  | 2 | 33 |
| 180 | 4 | 4 | 1 | 2 | 3 | 2 | 3 | 4 | 1 | 3 |  | 4 | 31 |
| 181 | 3 | 4 | 4 | 3 | 4 | 4 | 2 | 3 | 4 | 3 |  | 4 | 38 |
| 182 | 2 | 2 | 3 | 4 | 4 | 4 | 4 | 2 | 2 | 2 |  | 2 | 31 |
| 183 | 3 | 4 | 4 | 3 | 3 | 2 | 3 | 2 | 1 | 3 |  | 2 | 30 |
| 184 | 4 | 4 | 4 | 1 | 4 | 4 | 4 | 3 | 1 | 2 |  | 1 | 32 |
| 185 | 3 | 4 | 3 | 2 | 4 | 4 | 3 | 2 | 1 | 3 |  | 2 | 31 |
| 186 | 2 | 4 | 2 | 3 | 3 | 4 | 4 | 2 | 3 | 2 |  | 3 | 32 |
| 187 | 3 | 4 | 1 | 2 | 2 | 3 | 1 | 3 | 1 | 2 |  | 3 | 25 |
| 188 | 3 | 4 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 3 |  | 3 | 29 |
| 189 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 2 | 2 |  | 3 | 24 |
| 190 | 4 | 3 | 3 | 2 | 4 | 3 | 2 | 3 | 4 | 4 |  | 3 | 35 |
| 191 | 3 | 4 | 2 | 2 | 3 | 3 | 4 | 3 | 2 | 2 |  | 3 | 31 |
| 192 | 2 | 4 | 2 | 2 | 3 | 3 | 2 | 2 | 1 | 2 |  | 2 | 25 |

|            |     |     |     |     |     |     |     |     |     |     |   |     |      |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|------|
| <b>193</b> | 1   | 4   | 2   | 1   | 2   | 3   | 2   | 2   | 1   | 2   |   | 2   | 22   |
| <b>194</b> | 3   | 3   | 3   | 2   | 2   | 2   | 2   | 2   | 1   | 3   |   | 2   | 25   |
| <b>195</b> | 3   | 3   | 4   | 3   | 3   | 2   | 3   | 2   | 1   | 4   |   | 2   | 30   |
| <b>196</b> | 2   | 3   | 2   | 3   | 3   | 2   | 4   | 2   | 1   | 3   |   | 4   | 29   |
| <b>Jml</b> | 567 | 657 | 593 | 498 | 565 | 546 | 508 | 568 | 492 | 539 | 0 | 552 | 6085 |

# **Lampiran 8**

## **Data Kualitas Indikator Variabel Penelitian**

Data Kualitas Indikator Variabel Penelitian

| No. |    |    | FB1 | FB2 | FB3 | FB4 | KP1 | KP2 | KP3 | KP4 |
|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1   | 36 | 20 | 8   | 7   | 9   | 12  | 12  | 14  | 5   | 8   |
| 2   | 28 | 14 | 10  | 7   | 8   | 9   | 9   | 12  | 6   | 4   |
| 3   | 26 | 15 | 11  | 7   | 9   | 9   | 8   | 14  | 6   | 6   |
| 4   | 31 | 17 | 8   | 7   | 9   | 12  | 9   | 14  | 6   | 8   |
| 5   | 28 | 11 | 11  | 10  | 9   | 9   | 8   | 11  | 6   | 4   |
| 6   | 26 | 13 | 12  | 9   | 10  | 11  | 10  | 10  | 5   | 4   |
| 7   | 30 | 16 | 9   | 8   | 9   | 13  | 10  | 12  | 5   | 7   |
| 8   | 31 | 16 | 10  | 7   | 9   | 10  | 10  | 14  | 6   | 6   |
| 9   | 31 | 17 | 11  | 8   | 10  | 12  | 11  | 12  | 6   | 8   |
| 10  | 31 | 16 | 14  | 8   | 14  | 16  | 11  | 13  | 6   | 8   |
| 11  | 25 | 17 | 10  | 9   | 9   | 12  | 9   | 12  | 6   | 7   |
| 12  | 27 | 16 | 10  | 6   | 9   | 9   | 11  | 12  | 4   | 6   |
| 13  | 31 | 17 | 8   | 8   | 9   | 13  | 12  | 13  | 5   | 6   |
| 14  | 32 | 19 | 14  | 9   | 15  | 16  | 11  | 11  | 6   | 6   |
| 15  | 24 | 15 | 16  | 9   | 15  | 15  | 9   | 12  | 6   | 6   |
| 16  | 28 | 16 | 12  | 6   | 10  | 13  | 9   | 14  | 6   | 6   |
| 17  | 28 | 17 | 12  | 8   | 11  | 12  | 11  | 10  | 6   | 6   |
| 18  | 33 | 17 | 12  | 7   | 14  | 16  | 10  | 12  | 6   | 6   |
| 19  | 25 | 16 | 12  | 7   | 11  | 12  | 9   | 12  | 6   | 6   |
| 20  | 30 | 14 | 8   | 8   | 8   | 10  | 9   | 10  | 5   | 7   |
| 21  | 25 | 15 | 10  | 8   | 14  | 12  | 9   | 13  | 6   | 4   |
| 22  | 25 | 15 | 11  | 9   | 10  | 14  | 9   | 9   | 5   | 4   |
| 23  | 28 | 15 | 10  | 8   | 10  | 16  | 11  | 14  | 6   | 6   |
| 24  | 28 | 16 | 12  | 8   | 11  | 12  | 8   | 11  | 6   | 7   |
| 25  | 23 | 11 | 13  | 10  | 14  | 14  | 6   | 10  | 5   | 4   |
| 26  | 25 | 13 | 12  | 9   | 13  | 13  | 8   | 12  | 6   | 5   |
| 27  | 23 | 17 | 16  | 10  | 14  | 16  | 7   | 13  | 5   | 6   |
| 28  | 25 | 16 | 13  | 9   | 12  | 15  | 9   | 15  | 6   | 7   |
| 29  | 22 | 13 | 11  | 10  | 13  | 12  | 8   | 10  | 5   | 7   |
| 30  | 19 | 13 | 9   | 9   | 9   | 7   | 7   | 12  | 3   | 5   |
| 31  | 27 | 15 | 9   | 7   | 12  | 9   | 5   | 11  | 2   | 4   |
| 32  | 31 | 15 | 9   | 8   | 9   | 7   | 10  | 11  | 6   | 6   |
| 33  | 34 | 19 | 10  | 8   | 10  | 8   | 10  | 14  | 8   | 7   |
| 34  | 29 | 14 | 6   | 10  | 11  | 7   | 10  | 8   | 5   | 6   |
| 35  | 22 | 13 | 7   | 8   | 8   | 8   | 8   | 11  | 7   | 4   |
| 36  | 23 | 14 | 8   | 9   | 9   | 8   | 11  | 10  | 6   | 5   |
| 37  | 26 | 15 | 7   | 9   | 8   | 8   | 9   | 9   | 5   | 6   |
| 38  | 20 | 11 | 10  | 9   | 13  | 8   | 8   | 11  | 6   | 4   |
| 39  | 33 | 17 | 10  | 7   | 14  | 10  | 9   | 12  | 7   | 6   |
| 40  | 30 | 20 | 10  | 8   | 12  | 7   | 11  | 15  | 7   | 8   |
| 41  | 23 | 14 | 4   | 7   | 9   | 6   | 9   | 12  | 6   | 5   |
| 42  | 29 | 17 | 8   | 8   | 13  | 6   | 11  | 14  | 5   | 7   |
| 43  | 21 | 14 | 6   | 7   | 7   | 6   | 9   | 10  | 7   | 5   |

|    |    |    |    |    |    |    |    |    |   |   |
|----|----|----|----|----|----|----|----|----|---|---|
| 44 | 28 | 15 | 14 | 12 | 13 | 14 | 8  | 12 | 6 | 6 |
| 45 | 27 | 16 | 8  | 11 | 10 | 10 | 10 | 11 | 6 | 5 |
| 46 | 25 | 14 | 14 | 9  | 13 | 13 | 9  | 10 | 7 | 7 |
| 47 | 20 | 12 | 8  | 10 | 11 | 9  | 7  | 11 | 5 | 5 |
| 48 | 26 | 15 | 8  | 9  | 10 | 11 | 9  | 11 | 7 | 6 |
| 49 | 21 | 12 | 8  | 12 | 10 | 8  | 9  | 11 | 5 | 7 |
| 50 | 28 | 15 | 12 | 9  | 9  | 11 | 9  | 10 | 6 | 4 |
| 51 | 27 | 14 | 12 | 8  | 15 | 11 | 9  | 10 | 6 | 7 |
| 52 | 23 | 17 | 8  | 8  | 11 | 7  | 10 | 14 | 7 | 7 |
| 53 | 23 | 12 | 8  | 8  | 11 | 10 | 9  | 10 | 5 | 5 |
| 54 | 28 | 18 | 10 | 9  | 13 | 12 | 11 | 12 | 6 | 7 |
| 55 | 25 | 12 | 8  | 10 | 11 | 8  | 11 | 11 | 8 | 6 |
| 56 | 25 | 13 | 6  | 6  | 8  | 10 | 8  | 10 | 5 | 6 |
| 57 | 26 | 14 | 8  | 8  | 11 | 7  | 7  | 10 | 7 | 5 |
| 58 | 24 | 14 | 4  | 11 | 8  | 6  | 10 | 12 | 4 | 4 |
| 59 | 32 | 15 | 8  | 8  | 12 | 10 | 10 | 14 | 7 | 5 |
| 60 | 25 | 12 | 8  | 7  | 9  | 9  | 8  | 10 | 4 | 5 |
| 61 | 28 | 16 | 12 | 8  | 11 | 15 | 9  | 12 | 7 | 5 |
| 62 | 29 | 16 | 16 | 12 | 15 | 16 | 9  | 11 | 6 | 5 |
| 63 | 27 | 14 | 14 | 9  | 12 | 12 | 10 | 13 | 6 | 5 |
| 64 | 30 | 16 | 13 | 9  | 12 | 12 | 10 | 13 | 5 | 6 |
| 65 | 31 | 17 | 10 | 9  | 11 | 11 | 11 | 12 | 5 | 8 |
| 66 | 26 | 13 | 11 | 8  | 10 | 12 | 11 | 10 | 6 | 6 |
| 67 | 26 | 13 | 13 | 10 | 11 | 13 | 9  | 11 | 5 | 6 |
| 68 | 28 | 16 | 9  | 8  | 9  | 11 | 9  | 14 | 6 | 7 |
| 69 | 30 | 17 | 11 | 11 | 15 | 10 | 9  | 14 | 6 | 5 |
| 70 | 26 | 12 | 8  | 11 | 14 | 11 | 9  | 10 | 4 | 5 |
| 71 | 33 | 16 | 10 | 7  | 9  | 10 | 8  | 14 | 6 | 6 |
| 72 | 28 | 19 | 10 | 6  | 10 | 9  | 11 | 13 | 5 | 6 |
| 73 | 26 | 12 | 9  | 9  | 11 | 7  | 9  | 9  | 6 | 5 |
| 74 | 26 | 13 | 11 | 9  | 13 | 10 | 9  | 11 | 6 | 4 |
| 75 | 27 | 16 | 12 | 8  | 10 | 9  | 8  | 12 | 6 | 6 |
| 76 | 24 | 14 | 12 | 10 | 11 | 12 | 6  | 11 | 8 | 6 |
| 77 | 25 | 15 | 11 | 7  | 12 | 12 | 10 | 13 | 5 | 8 |
| 78 | 31 | 13 | 14 | 10 | 14 | 14 | 9  | 15 | 6 | 6 |
| 79 | 30 | 15 | 11 | 8  | 9  | 9  | 10 | 12 | 6 | 5 |
| 80 | 26 | 12 | 9  | 5  | 12 | 12 | 7  | 12 | 7 | 5 |
| 81 | 26 | 14 | 8  | 9  | 7  | 15 | 9  | 11 | 5 | 6 |
| 82 | 28 | 17 | 8  | 8  | 8  | 9  | 12 | 12 | 5 | 6 |
| 83 | 28 | 14 | 10 | 11 | 10 | 14 | 10 | 11 | 6 | 5 |
| 84 | 23 | 14 | 10 | 11 | 14 | 10 | 9  | 10 | 6 | 6 |
| 85 | 30 | 14 | 8  | 7  | 9  | 11 | 11 | 10 | 7 | 5 |
| 86 | 30 | 17 | 11 | 10 | 10 | 12 | 11 | 10 | 5 | 4 |
| 87 | 24 | 11 | 12 | 8  | 14 | 10 | 9  | 12 | 5 | 5 |



|     |    |    |    |    |    |    |    |    |   |   |
|-----|----|----|----|----|----|----|----|----|---|---|
| 88  | 31 | 17 | 11 | 10 | 13 | 15 | 12 | 15 | 7 | 7 |
| 89  | 28 | 12 | 11 | 10 | 10 | 13 | 10 | 14 | 6 | 6 |
| 90  | 28 | 18 | 8  | 5  | 7  | 12 | 11 | 10 | 6 | 7 |
| 91  | 33 | 16 | 11 | 11 | 10 | 14 | 10 | 14 | 6 | 7 |
| 92  | 22 | 15 | 9  | 9  | 15 | 4  | 7  | 11 | 6 | 5 |
| 93  | 30 | 16 | 9  | 7  | 9  | 8  | 9  | 13 | 8 | 4 |
| 94  | 34 | 17 | 13 | 10 | 12 | 15 | 10 | 11 | 8 | 4 |
| 95  | 26 | 11 | 9  | 8  | 10 | 10 | 9  | 12 | 4 | 7 |
| 96  | 30 | 16 | 9  | 10 | 11 | 10 | 8  | 14 | 7 | 4 |
| 97  | 31 | 17 | 8  | 8  | 10 | 9  | 12 | 11 | 6 | 6 |
| 98  | 31 | 15 | 11 | 8  | 10 | 13 | 9  | 13 | 7 | 7 |
| 99  | 28 | 18 | 8  | 7  | 7  | 8  | 9  | 12 | 3 | 7 |
| 100 | 28 | 15 | 10 | 11 | 14 | 13 | 7  | 15 | 7 | 8 |
| 101 | 24 | 12 | 11 | 10 | 15 | 14 | 8  | 10 | 5 | 4 |
| 102 | 26 | 17 | 9  | 10 | 11 | 8  | 9  | 13 | 6 | 6 |
| 103 | 24 | 15 | 8  | 6  | 8  | 10 | 8  | 12 | 5 | 6 |
| 104 | 27 | 15 | 10 | 10 | 13 | 14 | 8  | 13 | 4 | 6 |
| 105 | 22 | 15 | 12 | 7  | 10 | 14 | 8  | 13 | 5 | 6 |
| 106 | 25 | 14 | 8  | 9  | 9  | 13 | 9  | 8  | 7 | 5 |
| 107 | 32 | 17 | 8  | 8  | 6  | 7  | 11 | 15 | 5 | 4 |
| 108 | 27 | 12 | 8  | 6  | 8  | 9  | 9  | 10 | 5 | 7 |
| 109 | 22 | 15 | 10 | 7  | 11 | 15 | 9  | 9  | 5 | 6 |
| 110 | 29 | 15 | 10 | 8  | 11 | 8  | 7  | 10 | 7 | 5 |
| 111 | 28 | 17 | 11 | 11 | 10 | 16 | 11 | 12 | 4 | 7 |
| 112 | 29 | 16 | 11 | 7  | 9  | 10 | 10 | 12 | 6 | 5 |
| 113 | 29 | 13 | 10 | 7  | 10 | 8  | 9  | 12 | 6 | 6 |
| 114 | 25 | 14 | 9  | 7  | 9  | 9  | 11 | 9  | 3 | 5 |
| 115 | 21 | 12 | 8  | 7  | 8  | 9  | 6  | 7  | 4 | 6 |
| 116 | 26 | 18 | 13 | 8  | 9  | 10 | 9  | 13 | 6 | 4 |
| 117 | 28 | 13 | 14 | 9  | 11 | 12 | 7  | 10 | 4 | 7 |
| 118 | 27 | 15 | 11 | 6  | 9  | 11 | 8  | 12 | 6 | 5 |
| 119 | 28 | 18 | 6  | 5  | 5  | 7  | 6  | 10 | 5 | 4 |
| 120 | 28 | 13 | 9  | 8  | 11 | 10 | 9  | 12 | 6 | 5 |
| 121 | 27 | 15 | 11 | 8  | 11 | 10 | 8  | 10 | 7 | 4 |
| 122 | 30 | 14 | 9  | 7  | 8  | 9  | 7  | 11 | 6 | 6 |
| 123 | 29 | 15 | 11 | 9  | 11 | 12 | 8  | 11 | 4 | 7 |
| 124 | 29 | 12 | 9  | 8  | 11 | 11 | 8  | 13 | 4 | 5 |
| 125 | 27 | 16 | 12 | 8  | 9  | 11 | 12 | 13 | 5 | 7 |
| 126 | 25 | 12 | 12 | 9  | 13 | 9  | 3  | 8  | 6 | 3 |
| 127 | 25 | 14 | 11 | 10 | 12 | 11 | 4  | 10 | 2 | 4 |
| 128 | 24 | 14 | 8  | 7  | 8  | 7  | 4  | 10 | 6 | 3 |
| 129 | 30 | 13 | 9  | 9  | 11 | 10 | 4  | 13 | 4 | 5 |
| 130 | 22 | 13 | 12 | 9  | 14 | 12 | 3  | 10 | 6 | 4 |
| 131 | 26 | 14 | 12 | 9  | 9  | 11 | 6  | 13 | 6 | 5 |

|     |    |    |    |    |    |    |    |    |   |   |
|-----|----|----|----|----|----|----|----|----|---|---|
| 132 | 28 | 18 | 9  | 8  | 8  | 12 | 3  | 9  | 5 | 5 |
| 133 | 25 | 14 | 11 | 9  | 11 | 11 | 5  | 11 | 5 | 2 |
| 134 | 27 | 14 | 11 | 7  | 10 | 10 | 7  | 14 | 6 | 5 |
| 135 | 31 | 18 | 6  | 7  | 5  | 5  | 8  | 13 | 7 | 7 |
| 136 | 29 | 17 | 9  | 9  | 9  | 12 | 6  | 13 | 5 | 4 |
| 137 | 29 | 17 | 9  | 6  | 10 | 8  | 5  | 12 | 7 | 5 |
| 138 | 26 | 17 | 8  | 8  | 9  | 11 | 7  | 12 | 6 | 6 |
| 139 | 32 | 14 | 9  | 9  | 10 | 9  | 7  | 14 | 8 | 5 |
| 140 | 30 | 16 | 10 | 8  | 11 | 9  | 8  | 12 | 8 | 5 |
| 141 | 29 | 16 | 11 | 9  | 8  | 10 | 4  | 11 | 7 | 3 |
| 142 | 28 | 16 | 10 | 8  | 11 | 8  | 6  | 13 | 3 | 6 |
| 143 | 29 | 16 | 13 | 10 | 12 | 11 | 6  | 12 | 6 | 5 |
| 144 | 27 | 16 | 13 | 10 | 12 | 12 | 5  | 15 | 5 | 5 |
| 145 | 27 | 14 | 13 | 9  | 10 | 12 | 9  | 13 | 5 | 4 |
| 146 | 26 | 17 | 10 | 9  | 9  | 13 | 5  | 10 | 5 | 4 |
| 147 | 31 | 15 | 11 | 7  | 12 | 8  | 7  | 12 | 5 | 7 |
| 148 | 34 | 19 | 13 | 8  | 11 | 13 | 11 | 16 | 8 | 6 |
| 149 | 29 | 20 | 8  | 8  | 11 | 11 | 7  | 11 | 7 | 7 |
| 150 | 26 | 14 | 10 | 7  | 9  | 11 | 5  | 10 | 4 | 5 |
| 151 | 33 | 19 | 10 | 9  | 10 | 13 | 6  | 13 | 7 | 6 |
| 152 | 27 | 15 | 12 | 8  | 12 | 12 | 8  | 13 | 5 | 6 |
| 153 | 28 | 13 | 10 | 8  | 10 | 10 | 5  | 13 | 7 | 4 |
| 154 | 29 | 14 | 6  | 7  | 7  | 10 | 3  | 10 | 5 | 4 |
| 155 | 27 | 16 | 11 | 9  | 12 | 12 | 7  | 11 | 5 | 4 |
| 156 | 29 | 18 | 9  | 5  | 5  | 6  | 6  | 13 | 6 | 3 |
| 157 | 30 | 13 | 11 | 8  | 12 | 12 | 6  | 10 | 6 | 4 |
| 158 | 31 | 13 | 8  | 7  | 10 | 12 | 8  | 10 | 5 | 4 |
| 159 | 28 | 14 | 11 | 9  | 12 | 13 | 7  | 13 | 6 | 5 |
| 160 | 28 | 15 | 10 | 8  | 12 | 15 | 9  | 13 | 5 | 6 |
| 161 | 32 | 17 | 10 | 8  | 10 | 11 | 8  | 11 | 7 | 7 |
| 162 | 27 | 16 | 10 | 8  | 9  | 10 | 7  | 11 | 6 | 3 |
| 163 | 31 | 19 | 8  | 7  | 7  | 11 | 10 | 14 | 6 | 8 |
| 164 | 23 | 14 | 9  | 7  | 8  | 7  | 8  | 9  | 6 | 6 |
| 165 | 29 | 16 | 12 | 10 | 12 | 14 | 8  | 10 | 5 | 6 |
| 166 | 28 | 12 | 15 | 11 | 15 | 13 | 9  | 12 | 5 | 4 |
| 167 | 23 | 11 | 8  | 9  | 9  | 8  | 5  | 11 | 2 | 2 |
| 168 | 28 | 16 | 9  | 9  | 11 | 7  | 5  | 10 | 4 | 3 |
| 169 | 27 | 16 | 12 | 9  | 12 | 10 | 6  | 11 | 6 | 5 |
| 170 | 20 | 11 | 7  | 11 | 8  | 6  | 6  | 12 | 6 | 4 |
| 171 | 29 | 13 | 9  | 12 | 12 | 12 | 6  | 9  | 3 | 6 |
| 172 | 32 | 15 | 10 | 5  | 13 | 9  | 6  | 12 | 6 | 5 |
| 173 | 24 | 15 | 11 | 9  | 14 | 14 | 8  | 9  | 5 | 7 |
| 174 | 27 | 16 | 12 | 10 | 14 | 13 | 6  | 11 | 7 | 6 |
| 175 | 32 | 10 | 13 | 11 | 16 | 15 | 8  | 11 | 6 | 4 |



|        |        |       |       |        |      |      |         |         |        |         |
|--------|--------|-------|-------|--------|------|------|---------|---------|--------|---------|
| 176    | 27     | 15    | 7     | 9      | 9    | 7    | 8       | 15      | 6      | 6       |
| 177    | 27     | 15    | 6     | 6      | 9    | 7    | 9       | 14      | 4      | 6       |
| 178    | 28     | 14    | 7     | 11     | 11   | 9    | 9       | 12      | 3      | 5       |
| 179    | 30     | 14    | 9     | 10     | 13   | 9    | 9       | 12      | 5      | 7       |
| 180    | 26     | 15    | 10    | 11     | 15   | 10   | 8       | 13      | 4      | 6       |
| 181    | 29     | 16    | 12    | 10     | 14   | 13   | 11      | 15      | 6      | 6       |
| 182    | 23     | 15    | 12    | 11     | 16   | 14   | 8       | 10      | 7      | 6       |
| 183    | 27     | 15    | 11    | 8      | 14   | 13   | 7       | 11      | 7      | 5       |
| 184    | 25     | 12    | 10    | 9      | 11   | 8    | 9       | 11      | 8      | 4       |
| 185    | 27     | 12    | 9     | 10     | 13   | 13   | 8       | 13      | 6      | 4       |
| 186    | 29     | 14    | 9     | 8      | 11   | 12   | 8       | 13      | 6      | 5       |
| 187    | 28     | 14    | 9     | 10     | 6    | 7    | 6       | 12      | 2      | 5       |
| 188    | 28     | 16    | 9     | 9      | 9    | 7    | 8       | 12      | 4      | 5       |
| 189    | 24     | 14    | 9     | 8      | 9    | 8    | 5       | 9       | 6      | 4       |
| 190    | 31     | 17    | 9     | 8      | 6    | 6    | 12      | 13      | 5      | 5       |
| 191    | 27     | 15    | 12    | 8      | 8    | 9    | 8       | 12      | 6      | 5       |
| 192    | 26     | 12    | 14    | 10     | 11   | 9    | 6       | 11      | 4      | 4       |
| 193    | 27     | 13    | 11    | 8      | 10   | 11   | 4       | 11      | 4      | 3       |
| 194    | 27     | 16    | 12    | 8      | 14   | 9    | 6       | 10      | 5      | 4       |
| 195    | 30     | 15    | 11    | 7      | 12   | 10   | 7       | 11      | 7      | 5       |
| 196    | 29     | 14    | 14    | 7      | 9    | 11   | 6       | 12      | 6      | 5       |
| Σ      | 3372   | 2926  | 1982  | 1662   | 2088 | 2088 | 1624    | 2294    | 1101   | 1066    |
| rating | 0.8602 | 0.746 | 0.674 | 0.5653 | 0.71 | 0.71 | 0.75325 | 0.97534 | 0.5107 | 0.49443 |

## **Lampiran 9**

### **Analisis Deskriptif Variabel Penelitian**

## 1. Distribusi Frekuensi

Distribusi frekuensi adalah susunan data menurut kelas-kelas interval tertentu menurut kategori tertentu sebuah daftar (M. Iqbal Hasan, 2005: 41). Distribusi frekuensi ini dilakukan untuk mengubah data tunggal untuk dijadikan data kelompok dengan skala pengukuran menggunakan data interval. Data interval adalah data dimana objek/kategori dapat diurutkan berdasarkan suatu atribut yang memberikan informasi tentang interval antara tiap objek yang memiliki kategori sama. Bagian-bagian dari distribusi frekuensi yang harus diketahui, antara lain: banyaknya kelas ( $k$ ), jangkauan kelas ( $R$ ), dan panjang interval kelas ( $i$ ).

### a. Distribusi frekuensi karakteristik guru ( $X_1$ )

Berdasarkan hasil penelitian ini, maka dapat diketahui nilai-nilai yang dibutuhkan untuk membuat distribusi frekuensi budaya sekolah dengan sampel digunakan sebanyak 196 orang sebagai berikut:

#### 1) Menentukan panjang kelas ( $k$ )

$$\begin{aligned}k &= 1 + 3,3 \log n \\&= 1 + 3,3 \log 196 \\&= 1 + 3,3 \cdot 2,292 \\&= 1 + 7,56 = 8,6 \approx 9 \text{ kelas}\end{aligned}$$

#### 2) Menentukan jangkauan ( $R$ )

$$\begin{aligned}R &= \text{data terbesar} - \text{data terkecil} \\&= 60 - 33 = 27\end{aligned}$$

#### 3) Menentukan panjang interval kelas ( $i$ )

$$\begin{aligned}i &= \frac{R}{k} \\&= \frac{27}{9} = 3\end{aligned}$$

#### 4) Membuat tabel distribusi frekuensi

Setelah bagian-bagian data untuk melengkapi pembuatan distribusi frekuensi lengkap, maka langkah selanjutnya menganalisis dengan bantuan program komputer *Microsoft Excel* dalam membuat tabel distribusi frekuensi seperti tampak di bawah ini:

Distribusi Frekuensi Variabel Karakteristik Guru

| No.          | Interval | f          | X            | X <sup>2</sup> | fX            | fX <sup>2</sup> |
|--------------|----------|------------|--------------|----------------|---------------|-----------------|
| 1.           | 33-35    | 5          | 34           | 1156           | 170           | 5780            |
| 2.           | 36-38    | 8          | 37           | 1369           | 296           | 10952           |
| 3.           | 39-41    | 28         | 40           | 1600           | 1120          | 44800           |
| 4.           | 42-44    | 35         | 43           | 1849           | 1505          | 64715           |
| 5.           | 45-47    | 55         | 46           | 2116           | 2530          | 116380          |
| 6.           | 48-50    | 42         | 49           | 2401           | 2058          | 100842          |
| 7.           | 51-53    | 15         | 52           | 2704           | 780           | 40560           |
| 8.           | 54-56    | 5          | 55           | 3025           | 275           | 15125           |
| 9.           | 57-60    | 3          | 75.5         | 5700.25        | 226.5         | 17100.75        |
| <b>Total</b> |          | <b>196</b> | <b>431.5</b> |                | <b>8960.5</b> | <b>416254.8</b> |

Berdasarkan hasil yang telah diperoleh tersebut, maka dapat dihitung harga rerata, standar deviasi, dan varians dari variabel karakteristik guru berikut ini:

a) Rerata / mean ( $\bar{X}$ )

$$\begin{aligned}\bar{X} &= \frac{\sum fX}{\sum f} \\ &= \frac{8960.5}{196} = 45,71\end{aligned}$$

b) Varians sampel  $s^2$

$$s^2 = \frac{\sum fX^2}{\sum f} - \left( \frac{\sum fX}{\sum f} \right)^2$$

$$= \frac{416254.8}{196} - \left( \frac{8960.5}{196} \right)^2$$

$$= 2110.386 - 2077 = 33,71$$

c) Standar deviasi (s)

$$s = \sqrt{\text{varians}}$$

$$= \sqrt{33,71} = 5,80$$

b. Distribusi frekuensi fasilitas belajar ( $X_2$ )

Berdasarkan hasil penelitian ini, maka dapat diketahui nilai-nilai yang dibutuhkan untuk membuat distribusi frekuensi keteladanan guru dengan sampel digunakan sebanyak 196 orang sebagai berikut:

1) Menentukan panjang kelas (k)

$$k = 1 + 3,3 \log n$$

$$= 1 + 3,3 \log 196$$

$$= 1 + 3,3 \cdot 2,292$$

$$= 1 + 7,56 = 8,6 \approx 9 \text{ kelas}$$

2) Menentukan jangkauan (R)

$$R = \text{data terbesar} - \text{data terkecil}$$

$$= 59 - 23 = 34$$

3) Menentukan panjang interval kelas (i)

$$i = \frac{R}{k}$$

$$= \frac{34}{9} = 4$$

4) Membuat tabel distribusi frekuensi

Setelah bagian-bagian data untuk melengkapi pembuatan distribusi frekuensi lengkap, maka langkah selanjutnya menganalisis

dengan bantuan program komputer *Microsoft Excel* dalam membuat tabel distribusi frekuensi seperti tampak di bawah ini:

Distribusi Frekuensi Variabel Fasilitas Belajar

| No.          | Interval | f          | X            | X <sup>2</sup> | fX          | fX <sup>2</sup> |
|--------------|----------|------------|--------------|----------------|-------------|-----------------|
| 1.           | 23-26    | 5          | 24.5         | 600.25         | 122.5       | 3001.25         |
| 2.           | 27-30    | 8          | 28.5         | 812.25         | 228         | 6498            |
| 3.           | 31-34    | 29         | 32.5         | 1056.25        | 942.5       | 30631.25        |
| 4.           | 35-38    | 49         | 36.5         | 1332.25        | 1788.5      | 65280.25        |
| 5.           | 39-42    | 35         | 40.5         | 1640.25        | 1417.5      | 57408.75        |
| 6.           | 43-46    | 40         | 44.5         | 1980.25        | 1780        | 79210           |
| 7.           | 47-50    | 19         | 48.5         | 2352.25        | 921.5       | 44692.75        |
| 8.           | 51-54    | 7          | 52.5         | 2756.25        | 367.5       | 19293.75        |
| 9.           | 55-59    | 4          | 56.5         | 3192.25        | 226         | 12769           |
| <b>Total</b> |          | <b>196</b> | <b>364.5</b> |                | <b>7794</b> | <b>318785</b>   |

Berdasarkan hasil yang telah diperoleh tersebut, maka dapat dihitung

harga rerata, standar deviasi, dan varians dari variabel fasilitas belajar berikut ini:

a) Rerata / mean ( $\bar{X}$ )

$$\bar{X} = \frac{\sum fX}{\sum f}$$

$$= \frac{7794}{196} = 39,76$$

b) Varians sampel ( $s^2$ )

$$s^2 = \frac{\sum fX^2}{\sum f} - \left( \frac{\sum fX}{\sum f} \right)^2$$

$$= \frac{318785}{196} - \left( \frac{7794}{196} \right)^2$$

$$= 1626,5 - 1581,28 = 45,17$$

c) Standar deviasi (s)

$$s = \sqrt{\text{variens}}$$

$$= \sqrt{45,17} = 6,72$$

c. Distribusi frekuensi kualitas pembelajaran (Y)

Berdasarkan hasil penelitian ini, maka dapat diketahui nilai-nilai yang dibutuhkan untuk membuat distribusi frekuensi kualitas pembelajaran dengan sampel digunakan sebanyak 196 orang sebagai berikut:

1) Menentukan panjang kelas (k)

$$\begin{aligned}k &= 1 + 3,3 \log n \\&= 1 + 3,3 \log 196 \\&= 1 + 3,3 \cdot 2,292 \\&= 1 + 7,56 = 8,6 \approx \mathbf{9} \text{ kelas}\end{aligned}$$

2) Menentukan jangkauan (R)

$$\begin{aligned}R &= \text{data terbesar} - \text{data terkecil} \\&= 41 - 20 = 19\end{aligned}$$

3) Menentukan panjang interval kelas (i)

$$\begin{aligned}i &= \frac{R}{k} \\&= \frac{19}{9} = 3\end{aligned}$$

4) Membuat tabel distribusi frekuensi

Setelah bagian-bagian data untuk melengkapi pembuatan distribusi frekuensi lengkap, maka langkah selanjutnya menganalisis dengan bantuan program komputer *Microsoft Excel* dalam membuat tabel distribusi frekuensi seperti tampak di bawah ini:

### Distribusi Frekuensi Variabel Kualitas Pembelajaran

| No.          | Interval | f          | X          | X <sup>2</sup> | fX          | fX <sup>2</sup> |
|--------------|----------|------------|------------|----------------|-------------|-----------------|
| 1.           | 20-22    | 8          | 21         | 441            | 168         | 3528            |
| 2.           | 23-25    | 14         | 24         | 576            | 336         | 8064            |
| 3.           | 26-28    | 18         | 27         | 729            | 486         | 13122           |
| 4.           | 29-31    | 65         | 30         | 900            | 1950        | 58500           |
| 5.           | 32-34    | 55         | 33         | 1089           | 1815        | 59895           |
| 6.           | 35-37    | 27         | 36         | 1296           | 972         | 34992           |
| 7.           | 38-40    | 6          | 39         | 1521           | 234         | 9126            |
| 8.           | 41-43    | 3          | 42         | 1764           | 126         | 5292            |
| 9.           | 44-46    | 0          | 45         | 2025           | 0           | 0               |
| <b>Total</b> |          | <b>196</b> | <b>297</b> |                | <b>6087</b> | <b>192519</b>   |

Berdasarkan hasil yang telah diperoleh tersebut, maka dapat dihitung harga rerata, standar deviasi, dan varians dari variabel kualitas pembelajaran berikut ini:

a) Rerata / mean ( $\bar{X}$ )

$$\begin{aligned}\bar{X} &= \frac{\sum fX}{\sum f} \\ &= \frac{6087}{196} = 31,05\end{aligned}$$

b) Varians sampel ( $s^2$ )

$$\begin{aligned}s^2 &= \frac{\sum fX^2}{\sum f} - \left( \frac{\sum fX}{\sum f} \right)^2 \\ &= \frac{192519}{196} - \left( \frac{6087}{196} \right)^2 \\ &= 982.23 - 964.48 = 17.75\end{aligned}$$

c) Standar deviasi (s)

$$\begin{aligned}s &= \sqrt{\text{variens}} \\ &= \sqrt{17.75} = 4,21\end{aligned}$$



## **Lampiran 10**

### **Uji Prasarat Analisis**

## Uji Normalitas Data

Syarat data dapat didistribusi secara normal adalah dengan melakukan pengujian normalitas data. Pengujian normalitas data digunakan untuk mengetahui apakah data tersebut normal atau tidak. Jika hasil data yang diuji berbentuk normal, maka teknik analisis yang digunakan adalah statistik parametris. Jika hasil data yang diuji tidak normal, maka teknik analisis yang digunakan adalah statistik non-parametris.

Pengujian normalitas data ini menggunakan rumus *Chi Kuadrat*. Syarat data berdistribusi normal apabila skor *Chi Kuadrat* yang diperoleh dari hasil perhitungan ( $X_h^2$ ) lebih kecil dari skor *Chi Kuadrat* yang diperoleh dari tabel ( $X_t^2$ ) pada taraf signifikan 5% dan derajat kebebasan (dk) yang digunakan  $6 - 1 = 5$ . Merujuk pada tabel harga *Chi Kuadrat*, maka nilai  $X_t^2$  adalah 11,070. Untuk kurva normal baku, kelas dibagi menjadi 6 sesuai dengan simpangan baku standar yaitu 2,27%; 13,53%; 34,13%; 34,13%; 13,53%; dan 2,27%.

- $H_0$  : Data tidak normal, sehingga menggunakan statistik non-parametris ( $X_h^2 > X_t^2$ )
- $H_a$  : Data normal, sehingga menggunakan statistik parametris ( $X_h^2 < X_t^2$ )

### a. Uji Normalitas Data Variabel Karakteristik Guru ( $X_1$ )

Jumlah kelas interval telah diketahui yaitu 6 kelas, maka hasil distribusi pengujian normalitas datanya adalah sebagai berikut:

#### 5) Menentukan jangkauan (R)

$$\begin{aligned} R &= \text{data terbesar} - \text{data terkecil} \\ &= 60 - 33 = 27 \end{aligned}$$

6) Menentukan panjang interval kelas ( $i$ )

$$i = \frac{R}{k} \\ = \frac{27}{6} = 4$$

7) Frekuensi yang diharapkan ( $f_h$ )

- Baris pertama =  $2,27\% \times 196 = 5,292$
- Baris kedua =  $13,53\% \times 196 = 26,1464$
- Baris ketiga =  $34,13\% \times 19 = 66,5616$
- Baris keempat =  $34,13\% \times 19 = 66,5616$
- Baris kelima =  $13,53\% \times 196 = 26,1464$
- Baris keenam =  $2,27\% \times 196 = 5,292$

8) Membuat tabel distribusi frekuensi

Setelah bagian-bagian data untuk melengkapi pembuatan distribusi frekuensi lengkap, maka langkah selanjutnya menganalisis dengan bantuan program komputer *Microsoft Excel* dalam membuat tabel distribusi uji normalitas data seperti tampak di bawah ini:

**Tabel Penolong Uji Normalitas Data Variabel Karakteristik guru**

| Interval | $f_o$ | $f_h$   | $(f_o - f_h)$ | $(f_o - f_h)^2$ | $\frac{(f_o - f_h)^2}{f_h}$ |
|----------|-------|---------|---------------|-----------------|-----------------------------|
| 33-36    | 6     | 5.292   | 0.708         | 0.501264        | 0.094721                    |
| 37-41    | 35    | 26.1464 | 8.8536        | 78.38623        | 2.997974                    |
| 42-46    | 75    | 66.5616 | 8.4384        | 71.20659        | 1.069785                    |
| 47-51    | 62    | 66.5616 | -4.5616       | 20.80819        | 0.312616                    |
| 52-56    | 15    | 26.1464 | -11.1464      | 124.2422        | 4.751791                    |
| 57-61    | 3     | 5.292   | -2.292        | 5.253264        | 0.99268                     |
| Jumlah   | 196   | 196     | 0             | 300.3978        | 10.21957                    |

Berdasarkan hasil dari tabel diatas, Harga *Chi Kuadrat* hitung ( $X_h^2$ ) adalah 10,21. Jika nilai *Chi Kuadrat* tabel ( $X_t^2$ ) pada taraf kesalahan 5% adalah 11,070, maka harga chi kudrat hitung ( $X_h^2 = 10,21$ ) lebih kecil daripada harga *Chi Kuadrat* tabel ( $X_t^2 = 11,070$ ). Dengan demikian, data variabel karakteristik guru teruji berdistribusi normal sehingga dalam perhitungan dapat menggunakan statistik parametris. Hal ini berarti  $X_h^2 < X_t^2$ , **Ho ditolak** dan **Ha diterima**.

**b. Uji Normalitas Data Variabel Fasilitas Belajar ( $X_2$ )**

Jumlah kelas interval telah diketahui yaitu 6 kelas, maka hasil distribusi pengujian normalitas datanya adalah sebagai berikut:

1) Menentukan jangkauan (R)

$$\begin{aligned} R &= \text{data terbesar} - \text{data terkecil} \\ &= 59 - 23 = 36 \end{aligned}$$

2) Menentukan panjang interval kelas (i)

$$\begin{aligned} i &= \frac{R}{k} \\ &= \frac{36}{6} = 6 \end{aligned}$$

3) Frekuensi yang diharapkan ( $f_h$ )

- Baris pertama =  $2,27\% \times 196$  = 5,292
- Baris kedua =  $13,53\% \times 196$  = 26,1464
- Baris ketiga =  $34,13\% \times 19$  = 66,5616
- Baris keempat =  $34,13\% \times 19$  = 66,5616
- Baris kelima =  $13,53\% \times 196$  = 26,1464
- Baris keenam =  $2,27\% \times 196$  = 5,292

4) Membuat tabel distribusi frekuensi

Setelah bagian-bagian data untuk melengkapi pembuatan distribusi frekuensi lengkap, maka langkah selanjutnya menganalisis dengan bantuan program komputer *Microsoft Excel* dalam membuat tabel distribusi uji normalitas data seperti tampak di bawah ini:

**Tabel Penolong Uji Normalitas Data Variabel Fasilitas belajar**

| Interval | $f_o$ | $f_h$   | $(f_o - f_h)$ | $(f_o - f_h)^2$ | $\frac{(f_o - f_h)^2}{f_h}$ |
|----------|-------|---------|---------------|-----------------|-----------------------------|
| 23-28    | 6     | 5.292   | 0.708         | 0.501264        | 0.094721                    |
| 29-34    | 36    | 26.1464 | 9.8536        | 97.09343        | 3.713453                    |
| 35-40    | 67    | 66.5616 | 0.4384        | 0.192195        | 0.002887                    |
| 41-46    | 57    | 66.5616 | -9.5616       | 91.42419        | 1.373528                    |
| 47-52    | 22    | 26.1464 | -4.1464       | 17.19263        | 0.657553                    |
| 53-59    | 8     | 5.292   | 2.708         | 7.333264        | 1.385726                    |
|          | 196   | 196     | 0             | 213.737         | 7.227868                    |

Berdasarkan hasil dari tabel diatas, Harga *Chi Kuadrat* hitung ( $X_h^2$ ) adalah 7,22. Jika nilai *Chi Kuadrat* tabel ( $X_t^2$ ) pada taraf kesalahan 5% adalah 11,070, maka harga chi kudrat hitung ( $X_h^2 = 7,22$ ) lebih kecil daripada harga *Chi Kuadrat* tabel ( $X_t^2 = 11,070$ ). Dengan demikian, data variabel fasilitas belajar teruji berdistribusi normal sehingga dalam perhitungan dapat menggunakan statistik parametris. Hal ini berarti  $X_h^2 < X_t^2$ , **Ho ditolak** dan **Ha diterima**.

**c. Uji normalitas data variabel kualitas pembelajaran (Y)**

Jumlah kelas interval telah diketahui yaitu 6 kelas, maka hasil distribusi pengujian normalitas datanya adalah sebagai berikut:

1) Menentukan jangkauan (R)

$$\begin{aligned} R &= \text{data terbesar} - \text{data terkecil} \\ &= 41 - 20 = 19 \end{aligned}$$

2) Menentukan panjang interval kelas (i)

$$\begin{aligned} i &= \frac{R}{k} \\ &= \frac{19}{6} = 4 \end{aligned}$$

3) Frekuensi yang diharapkan ( $f_h$ )

- Baris pertama =  $2,27\% \times 196 = 5,292$
- Baris kedua =  $13,53\% \times 196 = 26,1464$
- Baris ketiga =  $34,13\% \times 19 = 66,5616$
- Baris keempat =  $34,13\% \times 19 = 66,5616$
- Baris kelima =  $13,53\% \times 196 = 26,1464$
- Baris keenam =  $2,27\% \times 196 = 5,292$

4) Membuat tabel distribusi frekuensi

Setelah bagian-bagian data untuk melengkapi pembuatan distribusi frekuensi lengkap, maka langkah selanjutnya menganalisis dengan bantuan program komputer *Microsoft Excel* dalam membuat tabel distribusi uji normalitas data seperti tampak di bawah ini:

Tabel Penolong Uji Normalitas Data Variabel Kualitas pembelajaran

| Interval | $f_o$ | $f_h$   | $(f_o - f_h)$ | $(f_o - f_h)^2$ | $\frac{(f_o - f_h)^2}{f_h}$ |
|----------|-------|---------|---------------|-----------------|-----------------------------|
| 20-23    | 12    | 5.292   | 6.708         | 44.99726        | 8.502884                    |
| 24-28    | 28    | 26.1464 | 1.8536        | 3.435833        | 0.131407                    |
| 29-31    | 65    | 66.5616 | -1.5616       | 2.438595        | 0.036637                    |
| 32-35    | 62    | 66.5616 | -4.5616       | 20.80819        | 0.312616                    |
| 36-39    | 26    | 26.1464 | -0.1464       | 0.021433        | 0.00082                     |
| 40-43    | 3     | 5.292   | -2.292        | 5.253264        | 0.99268                     |
|          | 196   | 196     | 0             | 76.95458        | 9.977044                    |

Berdasarkan hasil dari tabel diatas, Harga *Chi Kuadrat* hitung ( $X_h^2$ ) adalah 9,97. Jika nilai *Chi Kuadrat* tabel ( $X_t^2$ ) pada taraf kesalahan 5% adalah 11,070, maka harga chi kudrat hitung ( $X_h^2 = 9,97$ ) lebih kecil daripada harga *Chi Kuadrat* tabel ( $X_t^2 = 11,070$ ). Dengan demikian, data variabel kualitas pembelajaran teruji berdistribusi normal sehingga dalam perhitungan dapat menggunakan statistik parametris. Hal ini berarti  $X_h^2 < X_t^2$ , **Ho ditolak** dan **Ha diterima**.

## **Lampiran 11**

### **Analisis Uji Hipotesis Korelasi Ganda**



## A. Korelasi *Product Moment* dan Korelasi Ganda

Korelasi merupakan istilah yang digunakan untuk mengukur kekuatan hubungan antar variabel. Analisis korelasi digunakan juga untuk mengetahui apakah variabel yang terkait memiliki hubungan atau tidak. Analisis korelasi yang digunakan dalam penelitian ini adalah korelasi *Product Moment* dan Korelasi Ganda dengan dua variabel. Berikut perhitungan untuk masing-masing korelasi untuk pengujian hipotesis.

1. Korelasi *Product Moment* adalah teknik korelasi yang digunakan untuk mencari hubungan dan membuktikan hipotesis hubungan dua variabel bila data kedua variabel tersebut berbentuk interval atau rasio. Berikut ini adalah rumus yang digunakan dalam menentukan harga  $r$  pada korelasi *Product Mome*:

$$r_{xy} = \frac{n \sum xy}{\sqrt{\sum x^2 \sum y^2}}$$

Dimana:

$r_{xy}$  = Korelasi antara variabel  $x$  dengan  $y$

$x = (x_i - \bar{x})$

$y = (y_i - \bar{y})$

2. Korelasi Ganda adalah

$$R_{y.x_1.x_2} = \sqrt{\frac{r_{yx_1}^2 + r_{yx_2}^2 - 2r_{yx_1} \cdot r_{yx_2} \cdot r_{x_1x_2}}{1 - r_{x_1x_2}^2}}$$

Sumber: Sugiyono (2012: 233)

Keterangan:

$R_{y.x_1x_2}$  = Korelasi antara karakteristik guru ( $X_1$ ) dan fasilitas belajar ( $X_2$ )

terhadap

Kualitas pembelajaran ( $Y$ )

$r_{yx_1}$  = Korelasi antara karakteristik guru ( $X_1$ ) dengan kualitas pembelajaran

( $Y$ )

$r_{yx_2}$  = Korelasi antara fasilitas belajar ( $X_2$ ) dengan kualitas pembelajaran ( $Y$ )

$r_{x_1x_2}$  = Korelasi antara karakteristik guru ( $X_1$ ) dengan fasilitas belajar ( $X_2$ )

Berdasarkan data yang diperoleh, maka dengan bantuan program komputer *Microsoft Excel* didapatkan harga-harga sebagai berikut:

Tabel Penolong Analisis Korelasi Ganda

| No | X1 | X2 | Y  | X1.Y | X2.Y | X1.X2 | X1 <sup>2</sup> | X2 <sup>2</sup> | Y <sup>2</sup> |
|----|----|----|----|------|------|-------|-----------------|-----------------|----------------|
| 1  | 60 | 36 | 39 | 2340 | 1404 | 2160  | 3600            | 1296            | 1521           |
| 2  | 45 | 34 | 31 | 1395 | 1054 | 1530  | 2025            | 1156            | 961            |
| 3  | 43 | 36 | 34 | 1462 | 1224 | 1548  | 1849            | 1296            | 1156           |
| 4  | 51 | 36 | 37 | 1887 | 1332 | 1836  | 2601            | 1296            | 1369           |
| 5  | 43 | 39 | 29 | 1247 | 1131 | 1677  | 1849            | 1521            | 841            |
| 6  | 41 | 42 | 29 | 1189 | 1218 | 1722  | 1681            | 1764            | 841            |
| 7  | 48 | 39 | 34 | 1632 | 1326 | 1872  | 2304            | 1521            | 1156           |
| 8  | 50 | 36 | 36 | 1800 | 1296 | 1800  | 2500            | 1296            | 1296           |
| 9  | 51 | 41 | 37 | 1887 | 1517 | 2091  | 2601            | 1681            | 1369           |
| 10 | 50 | 52 | 38 | 1900 | 1976 | 2600  | 2500            | 2704            | 1444           |
| 11 | 45 | 40 | 34 | 1530 | 1360 | 1800  | 2025            | 1600            | 1156           |
| 12 | 46 | 34 | 33 | 1518 | 1122 | 1564  | 2116            | 1156            | 1089           |
| 13 | 52 | 38 | 36 | 1872 | 1368 | 1976  | 2704            | 1444            | 1296           |
| 14 | 54 | 54 | 34 | 1836 | 1836 | 2916  | 2916            | 2916            | 1156           |
| 15 | 42 | 55 | 33 | 1386 | 1815 | 2310  | 1764            | 3025            | 1089           |
| 16 | 48 | 41 | 35 | 1680 | 1435 | 1968  | 2304            | 1681            | 1225           |
| 17 | 48 | 43 | 33 | 1584 | 1419 | 2064  | 2304            | 1849            | 1089           |
| 18 | 54 | 49 | 34 | 1836 | 1666 | 2646  | 2916            | 2401            | 1156           |
| 19 | 45 | 42 | 33 | 1485 | 1386 | 1890  | 2025            | 1764            | 1089           |

|    |    |    |    |      |      |      |      |      |      |
|----|----|----|----|------|------|------|------|------|------|
| 20 | 47 | 34 | 31 | 1457 | 1054 | 1598 | 2209 | 1156 | 961  |
| 21 | 43 | 44 | 32 | 1376 | 1408 | 1892 | 1849 | 1936 | 1024 |
| 22 | 42 | 44 | 27 | 1134 | 1188 | 1848 | 1764 | 1936 | 729  |
| 23 | 46 | 44 | 37 | 1702 | 1628 | 2024 | 2116 | 1936 | 1369 |
| 24 | 48 | 43 | 32 | 1536 | 1376 | 2064 | 2304 | 1849 | 1024 |
| 25 | 37 | 51 | 25 | 925  | 1275 | 1887 | 1369 | 2601 | 625  |
| 26 | 40 | 47 | 31 | 1240 | 1457 | 1880 | 1600 | 2209 | 961  |
| 27 | 42 | 56 | 31 | 1302 | 1736 | 2352 | 1764 | 3136 | 961  |
| 28 | 44 | 49 | 37 | 1628 | 1813 | 2156 | 1936 | 2401 | 1369 |
| 29 | 38 | 46 | 30 | 1140 | 1380 | 1748 | 1444 | 2116 | 900  |
| 30 | 34 | 34 | 27 | 918  | 918  | 1156 | 1156 | 1156 | 729  |
| 31 | 45 | 37 | 22 | 990  | 814  | 1665 | 2025 | 1369 | 484  |
| 32 | 48 | 33 | 33 | 1584 | 1089 | 1584 | 2304 | 1089 | 1089 |
| 33 | 57 | 36 | 39 | 2223 | 1404 | 2052 | 3249 | 1296 | 1521 |
| 34 | 46 | 34 | 29 | 1334 | 986  | 1564 | 2116 | 1156 | 841  |
| 35 | 37 | 31 | 30 | 1110 | 930  | 1147 | 1369 | 961  | 900  |
| 36 | 40 | 34 | 32 | 1280 | 1088 | 1360 | 1600 | 1156 | 1024 |
| 37 | 45 | 32 | 29 | 1305 | 928  | 1440 | 2025 | 1024 | 841  |
| 38 | 33 | 40 | 29 | 957  | 1160 | 1320 | 1089 | 1600 | 841  |
| 39 | 53 | 41 | 34 | 1802 | 1394 | 2173 | 2809 | 1681 | 1156 |
| 40 | 54 | 37 | 41 | 2214 | 1517 | 1998 | 2916 | 1369 | 1681 |
| 41 | 39 | 26 | 32 | 1248 | 832  | 1014 | 1521 | 676  | 1024 |
| 42 | 49 | 35 | 37 | 1813 | 1295 | 1715 | 2401 | 1225 | 1369 |
| 43 | 38 | 26 | 31 | 1178 | 806  | 988  | 1444 | 676  | 961  |
| 44 | 45 | 53 | 32 | 1440 | 1696 | 2385 | 2025 | 2809 | 1024 |
| 45 | 45 | 39 | 32 | 1440 | 1248 | 1755 | 2025 | 1521 | 1024 |
| 46 | 42 | 49 | 33 | 1386 | 1617 | 2058 | 1764 | 2401 | 1089 |
| 47 | 35 | 38 | 28 | 980  | 1064 | 1330 | 1225 | 1444 | 784  |
| 48 | 44 | 38 | 33 | 1452 | 1254 | 1672 | 1936 | 1444 | 1089 |
| 49 | 35 | 38 | 32 | 1120 | 1216 | 1330 | 1225 | 1444 | 1024 |
| 50 | 46 | 41 | 29 | 1334 | 1189 | 1886 | 2116 | 1681 | 841  |
| 51 | 44 | 46 | 32 | 1408 | 1472 | 2024 | 1936 | 2116 | 1024 |
| 52 | 42 | 34 | 38 | 1596 | 1292 | 1428 | 1764 | 1156 | 1444 |
| 53 | 37 | 37 | 29 | 1073 | 1073 | 1369 | 1369 | 1369 | 841  |
| 54 | 49 | 44 | 36 | 1764 | 1584 | 2156 | 2401 | 1936 | 1296 |
| 55 | 39 | 37 | 36 | 1404 | 1332 | 1443 | 1521 | 1369 | 1296 |
| 56 | 41 | 30 | 29 | 1189 | 870  | 1230 | 1681 | 900  | 841  |
| 57 | 43 | 34 | 29 | 1247 | 986  | 1462 | 1849 | 1156 | 841  |

|    |    |    |    |      |      |      |      |      |      |
|----|----|----|----|------|------|------|------|------|------|
| 58 | 41 | 29 | 30 | 1230 | 870  | 1189 | 1681 | 841  | 900  |
| 59 | 50 | 38 | 36 | 1800 | 1368 | 1900 | 2500 | 1444 | 1296 |
| 60 | 41 | 33 | 27 | 1107 | 891  | 1353 | 1681 | 1089 | 729  |
| 61 | 46 | 46 | 33 | 1518 | 1518 | 2116 | 2116 | 2116 | 1089 |
| 62 | 48 | 59 | 31 | 1488 | 1829 | 2832 | 2304 | 3481 | 961  |
| 63 | 43 | 47 | 34 | 1462 | 1598 | 2021 | 1849 | 2209 | 1156 |
| 64 | 49 | 46 | 34 | 1666 | 1564 | 2254 | 2401 | 2116 | 1156 |
| 65 | 50 | 41 | 36 | 1800 | 1476 | 2050 | 2500 | 1681 | 1296 |
| 66 | 41 | 41 | 33 | 1353 | 1353 | 1681 | 1681 | 1681 | 1089 |
| 67 | 41 | 47 | 31 | 1271 | 1457 | 1927 | 1681 | 2209 | 961  |
| 68 | 48 | 37 | 36 | 1728 | 1332 | 1776 | 2304 | 1369 | 1296 |
| 69 | 51 | 47 | 34 | 1734 | 1598 | 2397 | 2601 | 2209 | 1156 |
| 70 | 41 | 44 | 28 | 1148 | 1232 | 1804 | 1681 | 1936 | 784  |
| 71 | 51 | 36 | 34 | 1734 | 1224 | 1836 | 2601 | 1296 | 1156 |
| 72 | 49 | 35 | 35 | 1715 | 1225 | 1715 | 2401 | 1225 | 1225 |
| 73 | 40 | 36 | 29 | 1160 | 1044 | 1440 | 1600 | 1296 | 841  |
| 74 | 41 | 43 | 30 | 1230 | 1290 | 1763 | 1681 | 1849 | 900  |
| 75 | 45 | 39 | 32 | 1440 | 1248 | 1755 | 2025 | 1521 | 1024 |
| 76 | 40 | 45 | 31 | 1240 | 1395 | 1800 | 1600 | 2025 | 961  |
| 77 | 42 | 42 | 36 | 1512 | 1512 | 1764 | 1764 | 1764 | 1296 |
| 78 | 46 | 52 | 36 | 1656 | 1872 | 2392 | 2116 | 2704 | 1296 |
| 79 | 49 | 37 | 33 | 1617 | 1221 | 1813 | 2401 | 1369 | 1089 |
| 80 | 41 | 38 | 31 | 1271 | 1178 | 1558 | 1681 | 1444 | 961  |
| 81 | 43 | 39 | 31 | 1333 | 1209 | 1677 | 1849 | 1521 | 961  |
| 82 | 48 | 33 | 35 | 1680 | 1155 | 1584 | 2304 | 1089 | 1225 |
| 83 | 45 | 45 | 32 | 1440 | 1440 | 2025 | 2025 | 2025 | 1024 |
| 84 | 40 | 45 | 31 | 1240 | 1395 | 1800 | 1600 | 2025 | 961  |
| 85 | 48 | 35 | 33 | 1584 | 1155 | 1680 | 2304 | 1225 | 1089 |
| 86 | 49 | 43 | 30 | 1470 | 1290 | 2107 | 2401 | 1849 | 900  |
| 87 | 38 | 44 | 31 | 1178 | 1364 | 1672 | 1444 | 1936 | 961  |
| 88 | 50 | 49 | 41 | 2050 | 2009 | 2450 | 2500 | 2401 | 1681 |
| 89 | 43 | 44 | 36 | 1548 | 1584 | 1892 | 1849 | 1936 | 1296 |
| 90 | 49 | 32 | 34 | 1666 | 1088 | 1568 | 2401 | 1024 | 1156 |
| 91 | 52 | 46 | 37 | 1924 | 1702 | 2392 | 2704 | 2116 | 1369 |
| 92 | 41 | 37 | 29 | 1189 | 1073 | 1517 | 1681 | 1369 | 841  |
| 93 | 50 | 33 | 34 | 1700 | 1122 | 1650 | 2500 | 1089 | 1156 |
| 94 | 53 | 50 | 33 | 1749 | 1650 | 2650 | 2809 | 2500 | 1089 |
| 95 | 40 | 37 | 32 | 1280 | 1184 | 1480 | 1600 | 1369 | 1024 |

|     |    |    |    |      |      |      |      |      |      |
|-----|----|----|----|------|------|------|------|------|------|
| 96  | 50 | 40 | 33 | 1650 | 1320 | 2000 | 2500 | 1600 | 1089 |
| 97  | 50 | 35 | 35 | 1750 | 1225 | 1750 | 2500 | 1225 | 1225 |
| 98  | 50 | 42 | 36 | 1800 | 1512 | 2100 | 2500 | 1764 | 1296 |
| 99  | 49 | 30 | 31 | 1519 | 930  | 1470 | 2401 | 900  | 961  |
| 100 | 47 | 48 | 37 | 1739 | 1776 | 2256 | 2209 | 2304 | 1369 |
| 101 | 40 | 50 | 27 | 1080 | 1350 | 2000 | 1600 | 2500 | 729  |
| 102 | 47 | 38 | 34 | 1598 | 1292 | 1786 | 2209 | 1444 | 1156 |
| 103 | 42 | 32 | 31 | 1302 | 992  | 1344 | 1764 | 1024 | 961  |
| 104 | 46 | 47 | 31 | 1426 | 1457 | 2162 | 2116 | 2209 | 961  |
| 105 | 40 | 43 | 32 | 1280 | 1376 | 1720 | 1600 | 1849 | 1024 |
| 106 | 41 | 39 | 29 | 1189 | 1131 | 1599 | 1681 | 1521 | 841  |
| 107 | 50 | 29 | 35 | 1750 | 1015 | 1450 | 2500 | 841  | 1225 |
| 108 | 41 | 31 | 31 | 1271 | 961  | 1271 | 1681 | 961  | 961  |
| 109 | 38 | 43 | 29 | 1102 | 1247 | 1634 | 1444 | 1849 | 841  |
| 110 | 47 | 37 | 29 | 1363 | 1073 | 1739 | 2209 | 1369 | 841  |
| 111 | 49 | 48 | 34 | 1666 | 1632 | 2352 | 2401 | 2304 | 1156 |
| 112 | 47 | 37 | 33 | 1551 | 1221 | 1739 | 2209 | 1369 | 1089 |
| 113 | 45 | 35 | 33 | 1485 | 1155 | 1575 | 2025 | 1225 | 1089 |
| 114 | 43 | 34 | 28 | 1204 | 952  | 1462 | 1849 | 1156 | 784  |
| 115 | 35 | 32 | 23 | 805  | 736  | 1120 | 1225 | 1024 | 529  |
| 116 | 46 | 40 | 32 | 1472 | 1280 | 1840 | 2116 | 1600 | 1024 |
| 117 | 45 | 46 | 28 | 1260 | 1288 | 2070 | 2025 | 2116 | 784  |
| 118 | 44 | 37 | 31 | 1364 | 1147 | 1628 | 1936 | 1369 | 961  |
| 119 | 49 | 23 | 25 | 1225 | 575  | 1127 | 2401 | 529  | 625  |
| 120 | 45 | 38 | 32 | 1440 | 1216 | 1710 | 2025 | 1444 | 1024 |
| 121 | 44 | 40 | 29 | 1276 | 1160 | 1760 | 1936 | 1600 | 841  |
| 122 | 48 | 33 | 30 | 1440 | 990  | 1584 | 2304 | 1089 | 900  |
| 123 | 47 | 43 | 30 | 1410 | 1290 | 2021 | 2209 | 1849 | 900  |
| 124 | 43 | 39 | 30 | 1290 | 1170 | 1677 | 1849 | 1521 | 900  |
| 125 | 47 | 40 | 37 | 1739 | 1480 | 1880 | 2209 | 1600 | 1369 |
| 126 | 40 | 43 | 20 | 800  | 860  | 1720 | 1600 | 1849 | 400  |
| 127 | 42 | 44 | 20 | 840  | 880  | 1848 | 1764 | 1936 | 400  |
| 128 | 42 | 30 | 23 | 966  | 690  | 1260 | 1764 | 900  | 529  |
| 129 | 46 | 39 | 26 | 1196 | 1014 | 1794 | 2116 | 1521 | 676  |
| 130 | 37 | 47 | 23 | 851  | 1081 | 1739 | 1369 | 2209 | 529  |
| 131 | 44 | 41 | 30 | 1320 | 1230 | 1804 | 1936 | 1681 | 900  |
| 132 | 50 | 37 | 22 | 1100 | 814  | 1850 | 2500 | 1369 | 484  |
| 133 | 42 | 42 | 23 | 966  | 966  | 1764 | 1764 | 1764 | 529  |

|     |    |    |    |      |      |      |      |      |      |
|-----|----|----|----|------|------|------|------|------|------|
| 134 | 43 | 38 | 32 | 1376 | 1216 | 1634 | 1849 | 1444 | 1024 |
| 135 | 53 | 23 | 35 | 1855 | 805  | 1219 | 2809 | 529  | 1225 |
| 136 | 50 | 39 | 28 | 1400 | 1092 | 1950 | 2500 | 1521 | 784  |
| 137 | 49 | 33 | 29 | 1421 | 957  | 1617 | 2401 | 1089 | 841  |
| 138 | 45 | 36 | 31 | 1395 | 1116 | 1620 | 2025 | 1296 | 961  |
| 139 | 50 | 37 | 34 | 1700 | 1258 | 1850 | 2500 | 1369 | 1156 |
| 140 | 50 | 38 | 33 | 1650 | 1254 | 1900 | 2500 | 1444 | 1089 |
| 141 | 49 | 38 | 25 | 1225 | 950  | 1862 | 2401 | 1444 | 625  |
| 142 | 46 | 37 | 28 | 1288 | 1036 | 1702 | 2116 | 1369 | 784  |
| 143 | 47 | 46 | 29 | 1363 | 1334 | 2162 | 2209 | 2116 | 841  |
| 144 | 45 | 47 | 30 | 1350 | 1410 | 2115 | 2025 | 2209 | 900  |
| 145 | 44 | 44 | 31 | 1364 | 1364 | 1936 | 1936 | 1936 | 961  |
| 146 | 45 | 41 | 24 | 1080 | 984  | 1845 | 2025 | 1681 | 576  |
| 147 | 48 | 38 | 31 | 1488 | 1178 | 1824 | 2304 | 1444 | 961  |
| 148 | 57 | 45 | 41 | 2337 | 1845 | 2565 | 3249 | 2025 | 1681 |
| 149 | 53 | 38 | 32 | 1696 | 1216 | 2014 | 2809 | 1444 | 1024 |
| 150 | 41 | 37 | 24 | 984  | 888  | 1517 | 1681 | 1369 | 576  |
| 151 | 56 | 42 | 32 | 1792 | 1344 | 2352 | 3136 | 1764 | 1024 |
| 152 | 45 | 44 | 32 | 1440 | 1408 | 1980 | 2025 | 1936 | 1024 |
| 153 | 44 | 38 | 29 | 1276 | 1102 | 1672 | 1936 | 1444 | 841  |
| 154 | 46 | 30 | 22 | 1012 | 660  | 1380 | 2116 | 900  | 484  |
| 155 | 47 | 44 | 27 | 1269 | 1188 | 2068 | 2209 | 1936 | 729  |
| 156 | 50 | 25 | 28 | 1400 | 700  | 1250 | 2500 | 625  | 784  |
| 157 | 45 | 43 | 26 | 1170 | 1118 | 1935 | 2025 | 1849 | 676  |
| 158 | 48 | 37 | 27 | 1296 | 999  | 1776 | 2304 | 1369 | 729  |
| 159 | 44 | 45 | 31 | 1364 | 1395 | 1980 | 1936 | 2025 | 961  |
| 160 | 47 | 45 | 33 | 1551 | 1485 | 2115 | 2209 | 2025 | 1089 |
| 161 | 53 | 39 | 33 | 1749 | 1287 | 2067 | 2809 | 1521 | 1089 |
| 162 | 45 | 37 | 27 | 1215 | 999  | 1665 | 2025 | 1369 | 729  |
| 163 | 52 | 33 | 38 | 1976 | 1254 | 1716 | 2704 | 1089 | 1444 |
| 164 | 40 | 31 | 29 | 1160 | 899  | 1240 | 1600 | 961  | 841  |
| 165 | 48 | 48 | 29 | 1392 | 1392 | 2304 | 2304 | 2304 | 841  |
| 166 | 44 | 54 | 30 | 1320 | 1620 | 2376 | 1936 | 2916 | 900  |
| 167 | 37 | 34 | 20 | 740  | 680  | 1258 | 1369 | 1156 | 400  |
| 168 | 46 | 36 | 22 | 1012 | 792  | 1656 | 2116 | 1296 | 484  |
| 169 | 45 | 43 | 28 | 1260 | 1204 | 1935 | 2025 | 1849 | 784  |
| 170 | 35 | 32 | 28 | 980  | 896  | 1120 | 1225 | 1024 | 784  |
| 171 | 45 | 45 | 24 | 1080 | 1080 | 2025 | 2025 | 2025 | 576  |

|     |             |             |             |               |               |               |                       |                       |                      |
|-----|-------------|-------------|-------------|---------------|---------------|---------------|-----------------------|-----------------------|----------------------|
| 172 | 49          | 37          | 29          | 1421          | 1073          | 1813          | 2401                  | 1369                  | 841                  |
| 173 | 41          | 48          | 29          | 1189          | 1392          | 1968          | 1681                  | 2304                  | 841                  |
| 174 | 47          | 49          | 30          | 1410          | 1470          | 2303          | 2209                  | 2401                  | 900                  |
| 175 | 45          | 55          | 29          | 1305          | 1595          | 2475          | 2025                  | 3025                  | 841                  |
| 176 | 45          | 32          | 35          | 1575          | 1120          | 1440          | 2025                  | 1024                  | 1225                 |
| 177 | 45          | 28          | 33          | 1485          | 924           | 1260          | 2025                  | 784                   | 1089                 |
| 178 | 44          | 38          | 29          | 1276          | 1102          | 1672          | 1936                  | 1444                  | 841                  |
| 179 | 47          | 41          | 33          | 1551          | 1353          | 1927          | 2209                  | 1681                  | 1089                 |
| 180 | 44          | 46          | 31          | 1364          | 1426          | 2024          | 1936                  | 2116                  | 961                  |
| 181 | 49          | 49          | 38          | 1862          | 1862          | 2401          | 2401                  | 2401                  | 1444                 |
| 182 | 42          | 53          | 31          | 1302          | 1643          | 2226          | 1764                  | 2809                  | 961                  |
| 183 | 46          | 46          | 30          | 1380          | 1380          | 2116          | 2116                  | 2116                  | 900                  |
| 184 | 41          | 38          | 32          | 1312          | 1216          | 1558          | 1681                  | 1444                  | 1024                 |
| 185 | 42          | 45          | 31          | 1302          | 1395          | 1890          | 1764                  | 2025                  | 961                  |
| 186 | 47          | 40          | 32          | 1504          | 1280          | 1880          | 2209                  | 1600                  | 1024                 |
| 187 | 45          | 32          | 25          | 1125          | 800           | 1440          | 2025                  | 1024                  | 625                  |
| 188 | 47          | 34          | 29          | 1363          | 986           | 1598          | 2209                  | 1156                  | 841                  |
| 189 | 41          | 34          | 24          | 984           | 816           | 1394          | 1681                  | 1156                  | 576                  |
| 190 | 51          | 29          | 35          | 1785          | 1015          | 1479          | 2601                  | 841                   | 1225                 |
| 191 | 46          | 37          | 31          | 1426          | 1147          | 1702          | 2116                  | 1369                  | 961                  |
| 192 | 40          | 44          | 25          | 1000          | 1100          | 1760          | 1600                  | 1936                  | 625                  |
| 193 | 42          | 40          | 22          | 924           | 880           | 1680          | 1764                  | 1600                  | 484                  |
| 194 | 46          | 43          | 25          | 1150          | 1075          | 1978          | 2116                  | 1849                  | 625                  |
| 195 | 47          | 40          | 30          | 1410          | 1200          | 1880          | 2209                  | 1600                  | 900                  |
| 196 | 46          | 41          | 29          | 1334          | 1189          | 1886          | 2116                  | 1681                  | 841                  |
|     | <b>8871</b> | <b>7820</b> | <b>6085</b> | <b>278256</b> | <b>246297</b> | <b>357960</b> | <b>405759</b>         | <b>320422</b>         | <b>192261</b>        |
|     | <b>X1</b>   | <b>X2</b>   | <b>Y</b>    | <b>X1.Y</b>   | <b>X2.Y</b>   | <b>X1.X2</b>  | <b>X1<sup>2</sup></b> | <b>X2<sup>2</sup></b> | <b>Y<sup>2</sup></b> |

Berdasarkan tabel penolong korelasi ganda, maka dapat diketahui harga-harga tiap variabel berikut ini:

$$\sum X_1 = 8871 \quad \sum Y^2 = 192261$$

$$\sum X_2 = 7820 \quad \sum X_1 Y = 278256$$

$$\sum Y = 6085 \quad \sum X_2 Y = 246297$$

$$\sum X_1^2 = 405759 \quad \sum X_1 X_2 = 357960$$

$$\sum X_2^2 = 320422$$

- a. Korelasi antara karakteristik guru ( $X_1$ ) dengan kualitas pembelajaran ( $Y$ )

Berdasarkan data yang telah diperoleh, maka dapat ditentukan harga korelasi antara karakteristik guru dengan kualitas pembelajaran sebagai berikut:

$$\begin{aligned} r_{yx_1} &= \frac{n \sum X_1 Y - \sum X_1 \cdot \sum Y}{\sqrt{(n \sum X_1^2 - (\sum X_1)^2)(n \sum Y^2 - (\sum Y)^2)}} \\ &= \frac{196(278256) - (8871)(6085)}{\sqrt{((196 \cdot 405759) - 8871^2)(196 \cdot (192261) - 6085^2)}} \\ &= \frac{54538176 - 53980035}{\sqrt{(79528764 - 78694641)(37683156 - 37027225)}} \\ &= \frac{558141}{\sqrt{834123 \times 655931}} \\ &= \frac{558141}{739680.4} = 0,75 \end{aligned}$$

- b. Korelasi antara fasilitas belajar ( $X_2$ ) dengan kualitas pembelajaran ( $Y$ )

Berdasarkan data yang telah diperoleh, maka dapat ditentukan harga korelasi antara fasilitas belajar dengan kualitas pembelajaran sebagai berikut:

$$r_{yx_2} = \frac{n \sum X_2 Y - \sum X_2 \cdot \sum Y}{\sqrt{(n \sum X_2^2 - (\sum X_2)^2)(n \sum Y^2 - (\sum Y)^2)}}$$



$$\begin{aligned}
&= \frac{196(246297) - (7820)(6085)}{\sqrt{((196 \cdot 320422) - 7820^2)(196 \cdot (192261) - 6085^2)}} \\
&= \frac{48274212 - 47584700}{\sqrt{(62802712 - 61152400)(37683156 - 37027225)}} \\
&= \frac{689512}{\sqrt{1650312 \times 655931}} \\
&= \frac{689512}{1040428} = \mathbf{0,66}
\end{aligned}$$

c. Korelasi antara karakteristik guru ( $X_1$ ) dengan fasilitas belajar ( $X_2$ )

Berdasarkan data yang telah diperoleh, maka dapat ditentukan harga korelasi antara karakteristik guru dengan fasilitas belajar sebagai berikut:

$$\begin{aligned}
r_{x_1x_2} &= \frac{n \sum X_1X_2 - \sum X_1 \cdot \sum X_2}{\sqrt{(n \sum X_1^2 - (\sum X_1)^2)(n \sum X_2^2 - (\sum X_2)^2)}} \\
&= \frac{196(357960) - (8871)(7820)}{\sqrt{((196 \cdot 405759) - 8871^2)(196 \cdot (320422) - 7820^2)}} \\
&= \frac{70160160 - 69371220}{\sqrt{(79528764 - 78694641)(62802712 - 61152400)}} \\
&= \frac{834123}{\sqrt{1459856 \times 1650312}} \\
&= \frac{788940}{1173270} = \mathbf{0,67}
\end{aligned}$$

d. Korelasi antara karakteristik guru ( $X_1$ ) dan fasilitas belajar ( $X_2$ ) dengan karakteristik guru ( $Y$ )

Berdasarkan data-data yang telah diperoleh, maka dapat dianalisis harga korelasi antara karakteristik guru dan fasilitas belajar dengan kualitas pembelajaran sebagai berikut:

$$\begin{aligned}
 R_{y.x_1.x_2} &= \sqrt{\frac{r_{yx_1}^2 + r_{yx_2}^2 - 2r_{yx_1} \cdot r_{yx_2} \cdot r_{x_1x_2}}{1 - r_{x_1x_2}^2}} \\
 &= \sqrt{\frac{0,75^2 + 0,66^2 - 2 \cdot 0,75 \cdot 0,66 \cdot 0,67}{1 - 0,67^2}} \\
 &= \sqrt{\frac{0,569 + 0,4356 - 0,66}{1 - 0,4489}} \\
 &= \sqrt{\frac{0,341}{0,5511}} = \mathbf{0,78}
 \end{aligned}$$

Berdasarkan hasil tersebut dapat diketahui bahwa terdapat **hubungan positif** variabel karakteristik guru dan fasilitas belajar terhadap kualitas pembelajaran sebesar **0,78**. Untuk membuktikan apakah koefisien korelasi tersebut signifikan untuk digeneralisasikan ke dalam populasi, maka perlu membandingkan harga  $r$  tabel *product moment*. Bila sampel yang digunakan  $N=196$  dan taraf kesalahan ditetapkan 5%, maka harga  $r_{\text{tabel}}$  adalah sebesar 0,138. Syarat  $H_0$  adalah jika harga  $R_{y.x_1.x_2} < r_{\text{tabel}}$  dan  $H_a$  adalah  $R_{y.x_1.x_2} > r_{\text{tabel}}$ . Dengan membandingkan harga  $R_{y.x_1.x_2} = 0,78$  dan  $r_{\text{tabel}} = 0,138$ , maka dapat diketahui bahwa  $R_{y.x_1.x_2}$  lebih besar daripada  $r_{\text{tabel}}$  (**0,78 > 0,138**). Ini berarti  **$H_0$  ditolak** dan  **$H_a$  diterima**. Dengan demikian, data yang telah dianalisis dapat digeneralisasikan ke dalam populasi.

e. Interpretasi Koefisien Korelasi ( $R^2$ )

Menurut Sugiyono (2012:231), untuk menentukan interpretasi harga tiap koefisien korelasi, maka digunakan pedoman untuk memberikan interpretasi terhadap koefisien korelasi sebagai berikut:

Tabel Pedoman Interpretasi Koefisien Korelasi

| Interval Koefisien | Tingkat Hubungan |
|--------------------|------------------|
| 0,00 – 0,199       | Sangat rendah    |
| 0,20 – 0,399       | Rendah           |
| 0,40 – 0,599       | Sedang           |
| 0,60 – 0,799       | Kuat             |
| 0,80 – 1,000       | Sangat Kuat      |

Jika merujuk pada hasil korelasi yang diperoleh, maka dapat disimpulkan sebagai berikut:

- 1) Korelasi antara karakteristik guru ( $X_1$ ) dengan kualitas pembelajaran (Y) sebesar 0,75, dengan demikian tingkat hubungan korelasi ini termasuk **kuat**.
- 2) Korelasi antara fasilitas belajar ( $X_2$ ) dengan kualitas pembelajaran (Y) sebesar 0,66, dengan demikian tingkat hubungan korelasi ini termasuk **kuat**.
- 3) Korelasi antara karakteristik guru ( $X_1$ ) dengan fasilitas belajar ( $X_2$ ) sebesar 0,67, dengan demikian tingkat hubungan korelasi ini termasuk **kuat**.

4) Korelasi antara karakteristik guru ( $X_1$ ) dan fasilitas belajar ( $X_2$ ) dengan kualitas pembelajaran ( $Y$ ) sebesar 0,78, dengan demikian tingkat hubungan korelasi ini termasuk **kuat**.

f. Koefisien Determinasi ( $R^2$ )

Untuk mengetahui seberapa besar korelasi ini berpengaruh terhadap variabel dependen, maka dapat digunakan koefisien determinasi. Koefisien determinasi dapat diperoleh dengan mengkuadratkan hasil koefisien korelasi yang telah dianalisis. Berdasarkan data yang diperoleh, maka nilai dari  $R^2 = 0,78^2 = 0,61$  atau dalam persentase sebesar 61%. Dengan demikian dapat disimpulkan bahwa 61% pembentuk kualitas pembelajaran dipengaruhi oleh karakteristik guru dan fasilitas belajar, sedangkan sisanya yaitu 39% dipengaruhi faktor lain.

## **Lampiran 12**

### **Foto Dokumentasi**



Foto Uji Coba Instrumen



Foto Pengambilan data dengan kuisioner

## **Lampiran 13**

### **Kartu Bimbingan Skripsi**



KEMENTERIAN PENDIDIKAN NASIONAL  
UNIVERSITAS NEGERI YOGYAKARTA FAKULTAS TEKNIK  
JURUSAN PENDIDIKAN TEKNIK MESIN

Alamat: Kampus Karang Malang, Yogyakarta  
Telp. 586168 psw 281; telp langsung 520327; fax: 520327

Kartu Bimbingan Skripsi

Judul skripsi : Hubungan karakteristik guru dengan kepuasan siswa  
dalam proses pembelajaran di SMK Negeri 2 Yogyakarta  
Nama Mahasiswa : Teguh Budiono  
NIM : 08503241017  
Dosen Pembimbing : Dr. Zainur Rofiq

| Bimb.<br>ke- | Hari/Tanggal<br>Bimbingan | Materi Bimbingan               | Catatan Dosen<br>Pembimbing                                    | Tanda Tangan<br>Dosen<br>Pembimbing |
|--------------|---------------------------|--------------------------------|----------------------------------------------------------------|-------------------------------------|
| 1.           | Kamis<br>02/02/2012       | Persamaan konsep<br>judul      | Pemantapan pada judul<br>skripsi                               |                                     |
| 2.           | Jumat<br>10/02/2012       | Pendahuluan,<br>Latar belakang | Penekanan pada pokok<br>masalah, kesenjangan<br>belum terlihat |                                     |
| 3.           | Jumat<br>17/02/2012       | BAB I                          | Lanjut BAB I                                                   |                                     |
| 4            | Senin<br>21/02/2012       | BAB II                         | Penulisan sumber<br>referensi, hipotesis                       |                                     |
| 5            | Jumat<br>02/03/2012       | BAB II                         | Lanjut BAB II metode<br>penelitian                             |                                     |

Mengetahui,  
Kordinator Tugas Akhir Skripsi

Paryanto, M.Pd  
NIP. 19780111 200501 1 001





KEMENTERIAN PENDIDIKAN NASIONAL  
UNIVERSITAS NEGERI YOGYAKARTA FAKULTAS TEKNIK  
JURUSAN PENDIDIKAN TEKNIK MESIN  
Alamat: Kampus Karang Malang, Yogyakarta  
Telp. 586168 psw 281; telp langsung 520327; fax: 520327

| Bimb. ke- | Hari/Tanggal Bimbingan               | Materi Bimbingan             | Catatan Dosen Pembimbing                                                       | Tanda Tangan Dosen Pembimbing |
|-----------|--------------------------------------|------------------------------|--------------------------------------------------------------------------------|-------------------------------|
| 6.        | <del>Jumat</del> Senin<br>03/03/2012 | BAB II<br>Sumber Referensi   | con. sumber dan buku,<br>sumber di temukan,<br>opinion data & lihat<br>kembali |                               |
| 7.        | Senin<br>26/03/2012                  | BAB III<br>Sampele, Variabel | telah sampling<br>dan variabelnya                                              |                               |
| 8.        | Selasa<br>03/04/2012                 | BAB III                      | Disyahkan oleh dosen<br>dari Cirtack Uin                                       |                               |
| 9.        | Jumat<br>20/04/2012                  | BAB III                      | Metode penelitian,<br>analisis data                                            |                               |
| 10.       | Selasa<br>08/05/2012                 | Proposal                     | Kajian teori tidak ma-<br>tangs, analisis data<br>kurang jelas                 |                               |
| 11.       | Jumat<br>18/05/2012                  | Proposal                     | Kaji ulang proposalnya,<br>judul kurang relevan                                |                               |
| 12.       | Jumat<br>25/05/2012                  | Proposal                     | Pembuatan judul baru,<br>latar belakang dan<br>tujuan penelitian               |                               |
| 13.       | Senin<br>04/06/2012                  | Proposal                     | Kajian teori, analisis<br>data, kisi-kisi angket                               |                               |
| 14.       | Kamis<br>09/07/2012                  | BAB IV                       | Analisis data, lanjut<br>BAB IV                                                |                               |
| 15.       | Jumat<br>10/07/2012                  | BAB V                        | Lampiran - lampiran<br>ujian                                                   |                               |
|           |                                      |                              |                                                                                |                               |

## **Lampiran 14**

### **Penentuan Jumlah Sampel**

**PENENTUAN JUMLAH SAMPEL DARI POPULASI TERTENTU  
DENGAN TARAF KESALAHAN 1%, 5%, DAN 10%**

| N   | s   |     |     | N    | s   |     |     | N       | s   |     |     |
|-----|-----|-----|-----|------|-----|-----|-----|---------|-----|-----|-----|
|     | 1%  | 5%  | 10% |      | 1%  | 5%  | 10% |         | 1%  | 5%  | 10% |
| 10  | 10  | 10  | 10  | 280  | 197 | 155 | 138 | 2800    | 537 | 310 | 247 |
| 15  | 15  | 14  | 14  | 290  | 202 | 158 | 140 | 3000    | 543 | 312 | 248 |
| 20  | 19  | 19  | 19  | 300  | 207 | 161 | 143 | 3500    | 558 | 317 | 251 |
| 25  | 24  | 23  | 23  | 320  | 216 | 167 | 147 | 4000    | 569 | 320 | 254 |
| 30  | 29  | 28  | 27  | 340  | 225 | 172 | 151 | 4500    | 578 | 323 | 255 |
| 35  | 33  | 32  | 31  | 360  | 234 | 177 | 155 | 5000    | 586 | 326 | 257 |
| 40  | 38  | 36  | 35  | 380  | 242 | 182 | 158 | 6000    | 598 | 329 | 259 |
| 45  | 42  | 40  | 39  | 400  | 250 | 186 | 162 | 7000    | 606 | 332 | 261 |
| 50  | 47  | 44  | 42  | 420  | 257 | 191 | 165 | 8000    | 613 | 334 | 263 |
| 55  | 51  | 48  | 46  | 440  | 265 | 195 | 168 | 9000    | 618 | 335 | 263 |
| 60  | 55  | 51  | 49  | 460  | 272 | 198 | 171 | 10000   | 622 | 336 | 263 |
| 65  | 59  | 55  | 53  | 480  | 279 | 202 | 173 | 15000   | 635 | 340 | 266 |
| 70  | 63  | 58  | 56  | 500  | 285 | 205 | 176 | 20000   | 642 | 342 | 267 |
| 75  | 67  | 62  | 59  | 550  | 301 | 213 | 182 | 30000   | 649 | 344 | 268 |
| 80  | 71  | 65  | 62  | 600  | 315 | 221 | 187 | 40000   | 563 | 345 | 269 |
| 85  | 75  | 68  | 65  | 650  | 329 | 227 | 191 | 50000   | 655 | 346 | 269 |
| 90  | 79  | 72  | 68  | 700  | 341 | 233 | 195 | 75000   | 658 | 346 | 270 |
| 95  | 83  | 75  | 71  | 750  | 352 | 238 | 199 | 100000  | 659 | 347 | 270 |
| 100 | 87  | 78  | 73  | 800  | 363 | 243 | 202 | 150000  | 661 | 347 | 270 |
| 110 | 94  | 84  | 78  | 850  | 373 | 247 | 205 | 200000  | 661 | 347 | 270 |
| 120 | 102 | 89  | 83  | 900  | 382 | 251 | 208 | 250000  | 662 | 348 | 270 |
| 130 | 109 | 95  | 88  | 950  | 391 | 255 | 211 | 300000  | 662 | 348 | 270 |
| 140 | 116 | 100 | 92  | 1000 | 399 | 258 | 213 | 350000  | 662 | 348 | 270 |
| 150 | 122 | 105 | 97  | 1100 | 414 | 265 | 217 | 400000  | 662 | 348 | 270 |
| 160 | 129 | 110 | 101 | 1200 | 427 | 270 | 221 | 450000  | 663 | 348 | 270 |
| 170 | 135 | 114 | 105 | 1300 | 440 | 275 | 224 | 500000  | 663 | 348 | 270 |
| 180 | 142 | 119 | 108 | 1400 | 450 | 279 | 227 | 550000  | 663 | 348 | 270 |
| 190 | 148 | 123 | 112 | 1500 | 460 | 283 | 229 | 600000  | 663 | 348 | 270 |
| 200 | 154 | 127 | 115 | 1600 | 469 | 286 | 232 | 650000  | 663 | 348 | 270 |
| 210 | 160 | 131 | 118 | 1700 | 477 | 289 | 234 | 700000  | 663 | 348 | 270 |
| 220 | 165 | 135 | 122 | 1800 | 485 | 292 | 235 | 750000  | 663 | 348 | 270 |
| 230 | 171 | 139 | 125 | 1900 | 492 | 294 | 237 | 800000  | 663 | 348 | 271 |
| 240 | 176 | 142 | 127 | 2000 | 498 | 297 | 238 | 850000  | 663 | 348 | 271 |
| 250 | 182 | 146 | 130 | 2200 | 510 | 301 | 241 | 900000  | 663 | 348 | 271 |
| 260 | 187 | 149 | 133 | 2400 | 520 | 304 | 243 | 950000  | 663 | 348 | 271 |
| 270 | 192 | 152 | 135 | 2600 | 529 | 307 | 245 | 1000000 | 663 | 348 | 271 |
|     |     |     |     |      |     |     |     | ∞       | 664 | 349 | 272 |

## **Lampiran 15**

### **Nilai-nilai $r$ product moment**

NILAI-NILAI  $r$  PRODUCT MOMENT

| 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 | 125  | 0,176            | 0,230 |
| 14 | 0,532            | 0,661 | 38 | 0,320            | 0,413 | 150  | 0,159            | 0,210 |
| 15 | 0,514            | 0,641 | 39 | 0,316            | 0,408 | 175  | 0,148            | 0,194 |
| 16 | 0,497            | 0,623 | 40 | 0,312            | 0,403 | 200  | 0,138            | 0,181 |
| 17 | 0,482            | 0,606 | 41 | 0,308            | 0,398 | 300  | 0,113            | 0,148 |
| 18 | 0,468            | 0,590 | 42 | 0,304            | 0,393 | 400  | 0,098            | 0,128 |
| 19 | 0,456            | 0,575 | 43 | 0,301            | 0,389 | 500  | 0,088            | 0,115 |
| 20 | 0,444            | 0,561 | 44 | 0,297            | 0,384 | 600  | 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 16**

### **Nilai-nilai Chi Kuadrat**



# NILAI-NILAI CHI KUADRAT

| dk | Tarf signifikansi |        |        |        |        |        |
|----|-------------------|--------|--------|--------|--------|--------|
|    | 50%               | 30%    | 20%    | 10%    | 5%,    | 1%     |
| 1  | 0,455             | 1,074  | 1,642  | 2,706  | 3,841  | 6,635  |
| 2  | 1,386             | 2,408  | 3,219  | 4,605  | 5,991  | 9,210  |
| 3  | 2,366             | 3,665  | 4,642  | 6,251  | 7,815  | 11,341 |
| 4  | 3,357             | 4,878  | 5,989  | 7,779  | 9,488  | 13,277 |
| 5  | 4,351             | 6,064  | 7,289  | 9,236  | 11,070 | 15,086 |
| 6  | 5,348             | 7,231  | 8,558  | 10,645 | 12,592 | 16,812 |
| 7  | 6,346             | 8,383  | 9,803  | 12,017 | 14,067 | 18,475 |
| 8  | 7,344             | 9,524  | 11,030 | 13,362 | 15,507 | 20,090 |
| 9  | 8,343             | 10,656 | 12,242 | 14,684 | 16,919 | 21,666 |
| 10 | 9,342             | 11,781 | 13,442 | 15,987 | 18,307 | 23,209 |
| 11 | 10,341            | 12,899 | 14,631 | 17,275 | 19,675 | 24,725 |
| 12 | 11,340            | 14,011 | 15,812 | 18,549 | 21,026 | 26,217 |
| 13 | 12,340            | 15,119 | 16,985 | 19,812 | 22,362 | 27,688 |
| 14 | 13,339            | 16,222 | 18,151 | 21,064 | 23,685 | 29,141 |
| 15 | 14,339            | 17,322 | 19,311 | 22,307 | 24,996 | 30,578 |
| 16 | 15,338            | 18,418 | 20,465 | 23,542 | 26,296 | 32,000 |
| 17 | 16,338            | 19,511 | 21,615 | 24,769 | 27,587 | 33,409 |
| 18 | 17,338            | 20,601 | 22,760 | 25,989 | 28,869 | 34,805 |
| 19 | 18,338            | 21,689 | 23,900 | 27,204 | 30,144 | 36,191 |
| 20 | 19,337            | 22,775 | 25,038 | 28,412 | 31,410 | 37,566 |
| 21 | 20,337            | 23,858 | 26,171 | 29,615 | 32,671 | 38,932 |
| 22 | 21,337            | 24,939 | 27,301 | 30,813 | 33,924 | 40,289 |
| 23 | 22,337            | 26,018 | 28,429 | 32,007 | 35,172 | 41,638 |
| 24 | 23,337            | 27,096 | 29,553 | 33,196 | 35,415 | 42,980 |
| 25 | 24,337            | 28,172 | 30,675 | 34,382 | 37,652 | 44,314 |
| 26 | 25,336            | 29,246 | 31,795 | 35,563 | 38,885 | 45,642 |
| 27 | 26,336            | 30,319 | 32,912 | 36,741 | 40,113 | 46,963 |
| 28 | 27,336            | 31,391 | 34,027 | 37,916 | 41,337 | 48,278 |
| 29 | 28,336            | 32,461 | 35,139 | 39,087 | 42,557 | 49,588 |
| 30 | 29,336            | 33,530 | 36,250 | 40,256 | 43,773 | 50,892 |

## **Lampiran 17**

### **Nilai-nilai untuk distribusi F**



# NILAI-NILAI UNTUK DISTRIBUSI F

Baris atas untuk 5%  
Baris bawah untuk 1%

| V <sub>2</sub> = dk |                | V <sub>1</sub> = dk pembilang |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |                |
|---------------------|----------------|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Penyebut            |                | 1                             | 2              | 3              | 4              | 5              | 6              | 7              | 8              | 9              | 10             | 11             | 12             | 14             | 16             | 20             | 24             | 30             | 40             | 50             | 75             | 100            | 200            | 500            | 0              |
| 1                   | 161<br>4,052   | 200<br>4,999                  | 216<br>5,403   | 225<br>5,625   | 230<br>5,764   | 234<br>5,859   | 237<br>5,928   | 239<br>5,981   | 241<br>6,022   | 242<br>6,055   | 243<br>6,082   | 244<br>6,106   | 245<br>6,142   | 246<br>6,169   | 248<br>6,208   | 249<br>6,234   | 250<br>6,258   | 251<br>6,286   | 252<br>6,302   | 253<br>6,323   | 254<br>6,334   | 254<br>6,352   | 254<br>6,361   | 254<br>6,366   | 254<br>6,366   |
| 2                   | 18,51<br>98,49 | 19,00<br>99,00                | 19,16<br>99,17 | 19,25<br>99,30 | 19,33<br>99,33 | 19,36<br>99,34 | 19,37<br>99,35 | 19,38<br>99,38 | 19,39<br>99,40 | 19,41<br>99,41 | 19,42<br>99,41 | 19,43<br>99,42 | 19,44<br>99,43 | 19,45<br>99,44 | 19,46<br>99,45 | 19,47<br>99,46 | 19,48<br>99,47 | 19,48<br>99,48 | 19,49<br>99,49 | 19,49<br>99,49 | 19,49<br>99,49 | 19,50<br>99,49 | 19,50<br>99,50 | 19,50<br>99,50 | 19,50<br>99,50 |
| 3                   | 10,13<br>34,12 | 9,55<br>30,81                 | 9,28<br>29,46  | 9,12<br>28,71  | 9,01<br>28,24  | 8,94<br>27,91  | 8,88<br>27,67  | 8,84<br>27,49  | 8,81<br>27,34  | 8,78<br>27,23  | 8,76<br>27,13  | 8,74<br>27,05  | 8,71<br>26,92  | 8,69<br>26,83  | 8,66<br>26,69  | 8,64<br>26,60  | 8,62<br>26,50  | 8,60<br>26,41  | 8,58<br>26,35  | 8,57<br>26,27  | 8,56<br>26,23  | 8,54<br>26,18  | 8,54<br>26,14  | 8,54<br>26,12  | 8,53<br>26,12  |
| 4                   | 7,71<br>21,20  | 6,94<br>18,00                 | 6,59<br>16,69  | 6,39<br>15,98  | 6,26<br>15,52  | 6,16<br>15,21  | 6,09<br>14,98  | 6,04<br>14,80  | 6,00<br>14,66  | 5,96<br>14,54  | 5,93<br>14,45  | 5,91<br>14,37  | 5,87<br>14,24  | 5,84<br>14,15  | 5,80<br>14,02  | 5,77<br>13,93  | 5,74<br>13,83  | 5,71<br>13,74  | 5,70<br>13,69  | 5,68<br>13,61  | 5,66<br>13,57  | 5,65<br>13,52  | 5,64<br>13,48  | 5,63<br>13,46  | 5,63<br>13,46  |
| 5                   | 6,61<br>16,26  | 5,79<br>13,27                 | 5,41<br>12,06  | 5,19<br>11,39  | 5,05<br>10,97  | 4,95<br>10,67  | 4,88<br>10,45  | 4,82<br>10,27  | 4,78<br>10,15  | 4,74<br>10,05  | 4,70<br>9,96   | 4,68<br>9,89   | 4,64<br>9,77   | 4,60<br>9,68   | 4,56<br>9,55   | 4,53<br>9,47   | 4,50<br>9,38   | 4,46<br>9,29   | 4,44<br>9,24   | 4,42<br>9,17   | 4,40<br>9,13   | 4,38<br>9,07   | 4,37<br>9,04   | 4,36<br>9,02   | 4,36<br>9,02   |
| 6                   | 5,99<br>13,74  | 5,14<br>10,92                 | 4,76<br>9,78   | 4,53<br>9,15   | 4,39<br>8,75   | 4,28<br>8,47   | 4,21<br>8,26   | 4,15<br>8,10   | 4,10<br>7,98   | 4,06<br>7,87   | 4,03<br>7,79   | 4,00<br>7,72   | 3,96<br>7,60   | 3,92<br>7,52   | 3,87<br>7,39   | 3,84<br>7,31   | 3,81<br>7,23   | 3,77<br>7,14   | 3,75<br>7,09   | 3,72<br>7,02   | 3,71<br>6,99   | 3,69<br>6,94   | 3,68<br>6,90   | 3,67<br>6,88   | 3,67<br>6,88   |
| 7                   | 5,59<br>12,25  | 4,74<br>9,55                  | 4,35<br>8,45   | 4,14<br>7,85   | 3,97<br>7,46   | 3,87<br>7,19   | 3,79<br>7,00   | 3,73<br>6,84   | 3,68<br>6,71   | 3,63<br>6,62   | 3,60<br>6,54   | 3,57<br>6,47   | 3,51<br>6,35   | 3,49<br>6,27   | 3,44<br>6,15   | 3,41<br>6,07   | 3,38<br>5,98   | 3,34<br>5,90   | 3,32<br>5,85   | 3,29<br>5,78   | 3,28<br>5,75   | 3,25<br>5,70   | 3,24<br>5,67   | 3,23<br>5,65   | 3,23<br>5,65   |
| 8                   | 5,32<br>11,26  | 4,46<br>8,65                  | 4,07<br>7,59   | 3,84<br>7,01   | 3,69<br>6,63   | 3,58<br>6,37   | 3,50<br>6,19   | 3,44<br>6,03   | 3,39<br>5,91   | 3,34<br>5,82   | 3,31<br>5,74   | 3,28<br>5,67   | 3,23<br>5,56   | 3,20<br>5,48   | 3,15<br>5,36   | 3,12<br>5,28   | 3,08<br>5,20   | 3,05<br>5,11   | 3,03<br>5,06   | 3,00<br>5,00   | 2,98<br>4,99   | 2,96<br>4,91   | 2,94<br>4,88   | 2,93<br>4,86   | 2,93<br>4,86   |
| 9                   | 5,12<br>10,56  | 4,26<br>8,02                  | 3,86<br>6,99   | 3,63<br>6,42   | 3,48<br>6,06   | 3,37<br>5,80   | 3,29<br>5,62   | 3,23<br>5,47   | 3,18<br>5,35   | 3,13<br>5,26   | 3,10<br>5,18   | 3,07<br>5,11   | 3,02<br>5,00   | 2,98<br>4,92   | 2,93<br>4,80   | 2,89<br>4,73   | 2,86<br>4,64   | 2,82<br>4,56   | 2,77<br>4,45   | 2,76<br>4,41   | 2,73<br>4,36   | 2,72<br>4,33   | 2,71<br>4,31   | 2,71<br>4,31   | 2,71<br>4,31   |
| 10                  | 4,96<br>10,04  | 4,10<br>7,56                  | 3,71<br>6,55   | 3,48<br>5,99   | 3,33<br>5,64   | 3,22<br>5,39   | 3,14<br>5,21   | 3,07<br>5,05   | 3,02<br>4,95   | 2,97<br>4,85   | 2,94<br>4,78   | 2,91<br>4,71   | 2,86<br>4,60   | 2,82<br>4,52   | 2,77<br>4,41   | 2,74<br>4,33   | 2,70<br>4,25   | 2,67<br>4,17   | 2,64<br>4,12   | 2,61<br>4,05   | 2,59<br>4,01   | 2,56<br>3,96   | 2,55<br>3,93   | 2,54<br>3,91   | 2,54<br>3,91   |
| 11                  | 4,84<br>9,65   | 3,98<br>7,20                  | 3,59<br>6,22   | 3,36<br>5,67   | 3,20<br>5,32   | 3,09<br>5,07   | 3,01<br>4,89   | 2,95<br>4,74   | 2,90<br>4,63   | 2,86<br>4,54   | 2,82<br>4,46   | 2,79<br>4,40   | 2,74<br>4,29   | 2,70<br>4,21   | 2,65<br>4,10   | 2,61<br>4,02   | 2,57<br>3,94   | 2,53<br>3,86   | 2,50<br>3,80   | 2,47<br>3,74   | 2,45<br>3,70   | 2,42<br>3,66   | 2,41<br>3,62   | 2,40<br>3,60   | 2,40<br>3,60   |

| V <sub>2</sub> = dk |      | V <sub>1</sub> = dk pembilang |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------|------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Penyebut            |      | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 14   | 16   | 20   | 24   | 30   | 40   | 50   | 75   | 100  | 200  | 500  | 0    |
| 12                  | 4,75 | 3,88                          | 3,49 | 3,25 | 3,11 | 3,00 | 2,92 | 2,85 | 2,80 | 2,76 | 2,72 | 2,69 | 2,64 | 2,60 | 2,54 | 2,50 | 2,46 | 2,42 | 2,40 | 2,36 | 2,35 | 2,32 | 2,31 | 2,31 | 2,36 |
| 13                  | 9,33 | 6,83                          | 5,95 | 5,41 | 5,05 | 4,82 | 4,65 | 4,50 | 4,39 | 4,30 | 4,22 | 4,16 | 4,05 | 3,98 | 3,86 | 3,78 | 3,70 | 3,61 | 3,56 | 3,49 | 3,46 | 3,41 | 3,38 | 3,38 | 3,36 |
| 14                  | 4,67 | 3,80                          | 3,41 | 3,18 | 3,02 | 2,92 | 2,84 | 2,77 | 2,72 | 2,67 | 2,63 | 2,60 | 2,55 | 2,51 | 2,46 | 2,42 | 2,38 | 2,34 | 2,32 | 2,28 | 2,26 | 2,24 | 2,22 | 2,21 | 2,21 |
| 15                  | 9,07 | 6,71                          | 5,74 | 5,20 | 4,86 | 4,62 | 4,44 | 4,30 | 4,19 | 4,10 | 4,02 | 3,96 | 3,85 | 3,78 | 3,67 | 3,59 | 3,51 | 3,42 | 3,37 | 3,30 | 3,27 | 3,24 | 3,21 | 3,18 | 3,16 |
| 16                  | 4,60 | 3,74                          | 3,34 | 3,11 | 2,96 | 2,85 | 2,77 | 2,70 | 2,65 | 2,60 | 2,56 | 2,53 | 2,48 | 2,44 | 2,39 | 2,35 | 2,31 | 2,27 | 2,24 | 2,21 | 2,19 | 2,16 | 2,14 | 2,13 | 2,13 |
| 17                  | 8,65 | 6,51                          | 5,56 | 5,03 | 4,69 | 4,46 | 4,28 | 4,14 | 4,03 | 3,94 | 3,86 | 3,80 | 3,70 | 3,62 | 3,51 | 3,43 | 3,34 | 3,26 | 3,21 | 3,14 | 3,11 | 3,08 | 3,02 | 3,00 | 3,00 |
| 18                  | 4,54 | 3,68                          | 3,29 | 3,06 | 2,90 | 2,79 | 2,70 | 2,64 | 2,59 | 2,55 | 2,51 | 2,48 | 2,43 | 2,39 | 2,33 | 2,28 | 2,24 | 2,20 | 2,16 | 2,13 | 2,09 | 2,07 | 2,04 | 2,02 | 2,01 |
| 19                  | 8,53 | 6,23                          | 5,29 | 4,77 | 4,44 | 4,20 | 4,03 | 3,89 | 3,78 | 3,69 | 3,61 | 3,55 | 3,45 | 3,37 | 3,25 | 3,18 | 3,10 | 3,01 | 2,96 | 2,88 | 2,86 | 2,80 | 2,77 | 2,75 | 2,75 |
| 20                  | 4,49 | 3,63                          | 3,24 | 3,01 | 2,85 | 2,74 | 2,66 | 2,59 | 2,54 | 2,49 | 2,45 | 2,42 | 2,37 | 2,33 | 2,28 | 2,24 | 2,20 | 2,16 | 2,13 | 2,09 | 2,07 | 2,04 | 2,02 | 2,00 | 1,98 |
| 21                  | 8,40 | 6,11                          | 5,18 | 4,67 | 4,34 | 4,10 | 3,93 | 3,79 | 3,68 | 3,59 | 3,52 | 3,45 | 3,35 | 3,27 | 3,16 | 3,08 | 3,00 | 2,92 | 2,86 | 2,79 | 2,76 | 2,70 | 2,67 | 2,65 | 2,65 |
| 22                  | 4,41 | 3,55                          | 3,16 | 2,93 | 2,77 | 2,66 | 2,58 | 2,51 | 2,46 | 2,41 | 2,37 | 2,34 | 2,29 | 2,25 | 2,19 | 2,15 | 2,11 | 2,07 | 2,04 | 2,00 | 1,98 | 1,95 | 1,93 | 1,92 | 1,92 |
| 23                  | 8,28 | 6,01                          | 5,09 | 4,58 | 4,25 | 4,01 | 3,85 | 3,71 | 3,60 | 3,51 | 3,44 | 3,37 | 3,27 | 3,19 | 3,07 | 3,00 | 2,91 | 2,83 | 2,78 | 2,71 | 2,68 | 2,62 | 2,59 | 2,57 | 2,57 |
| 24                  | 4,38 | 3,52                          | 3,13 | 2,90 | 2,74 | 2,63 | 2,55 | 2,48 | 2,43 | 2,38 | 2,34 | 2,31 | 2,26 | 2,21 | 2,15 | 2,11 | 2,07 | 2,02 | 2,00 | 1,96 | 1,94 | 1,91 | 1,90 | 1,88 | 1,88 |
| 25                  | 8,18 | 5,93                          | 5,01 | 4,50 | 4,17 | 3,94 | 3,77 | 3,63 | 3,52 | 3,43 | 3,36 | 3,30 | 3,19 | 3,12 | 3,00 | 2,92 | 2,84 | 2,76 | 2,70 | 2,63 | 2,60 | 2,54 | 2,51 | 2,49 | 2,49 |
| 26                  | 4,35 | 3,49                          | 3,10 | 2,87 | 2,71 | 2,60 | 2,52 | 2,45 | 2,40 | 2,35 | 2,31 | 2,28 | 2,23 | 2,18 | 2,12 | 2,06 | 2,04 | 1,99 | 1,95 | 1,92 | 1,90 | 1,87 | 1,85 | 1,84 | 1,84 |
| 27                  | 8,10 | 5,85                          | 4,94 | 4,43 | 4,1  | 3,87 | 3,71 | 3,55 | 3,45 | 3,37 | 3,30 | 3,23 | 3,13 | 3,05 | 2,94 | 2,86 | 2,77 | 2,69 | 2,63 | 2,56 | 2,53 | 2,47 | 2,44 | 2,42 | 2,42 |
| 28                  | 4,32 | 3,47                          | 3,07 | 2,84 | 2,68 | 2,57 | 2,49 | 2,42 | 2,37 | 2,32 | 2,28 | 2,25 | 2,20 | 2,15 | 2,09 | 2,05 | 2,00 | 1,96 | 1,93 | 1,89 | 1,87 | 1,84 | 1,82 | 1,81 | 1,81 |
| 29                  | 8,02 | 5,78                          | 4,87 | 4,37 | 4,04 | 3,81 | 3,65 | 3,51 | 3,40 | 3,31 | 3,24 | 3,17 | 3,07 | 2,99 | 2,88 | 2,80 | 2,72 | 2,63 | 2,58 | 2,51 | 2,47 | 2,42 | 2,38 | 2,36 | 2,36 |
| 30                  | 4,30 | 3,44                          | 3,05 | 2,82 | 2,66 | 2,55 | 2,47 | 2,40 | 2,35 | 2,30 | 2,26 | 2,23 | 2,18 | 2,13 | 2,07 | 2,03 | 1,98 | 1,93 | 1,91 | 1,87 | 1,84 | 1,81 | 1,80 | 1,78 | 1,78 |
| 31                  | 7,94 | 5,72                          | 4,82 | 4,31 | 3,99 | 3,76 | 3,59 | 3,45 | 3,35 | 3,26 | 3,18 | 3,12 | 3,02 | 2,94 | 2,83 | 2,75 | 2,67 | 2,58 | 2,53 | 2,46 | 2,42 | 2,37 | 2,33 | 2,31 | 2,31 |
| 32                  | 4,29 | 3,42                          | 3,03 | 2,80 | 2,64 | 2,53 | 2,45 | 2,38 | 2,32 | 2,28 | 2,24 | 2,20 | 2,14 | 2,10 | 2,04 | 2,00 | 1,95 | 1,91 | 1,88 | 1,84 | 1,82 | 1,79 | 1,77 | 1,76 | 1,76 |
| 33                  | 7,88 | 5,66                          | 4,76 | 4,25 | 3,94 | 3,71 | 3,54 | 3,41 | 3,30 | 3,21 | 3,14 | 3,07 | 2,97 | 2,89 | 2,78 | 2,70 | 2,62 | 2,53 | 2,48 | 2,41 | 2,37 | 2,32 | 2,28 | 2,26 | 2,26 |
| 34                  | 4,26 | 3,40                          | 3,01 | 2,78 | 2,62 | 2,51 | 2,43 | 2,36 | 2,30 | 2,26 | 2,22 | 2,18 | 2,13 | 2,09 | 2,02 | 1,96 | 1,94 | 1,89 | 1,86 | 1,82 | 1,80 | 1,76 | 1,74 | 1,73 | 1,73 |
| 35                  | 7,82 | 5,61                          | 4,72 | 4,22 | 3,90 | 3,67 | 3,50 | 3,36 | 3,25 | 3,17 | 3,09 | 3,03 | 2,93 | 2,85 | 2,74 | 2,66 | 2,58 | 2,49 | 2,44 | 2,36 | 2,33 | 2,27 | 2,23 | 2,21 | 2,21 |
| 36                  | 4,24 | 3,38                          | 2,99 | 2,75 | 2,60 | 2,49 | 2,41 | 2,34 | 2,28 | 2,24 | 2,20 | 2,16 | 2,11 | 2,06 | 2,00 | 1,96 | 1,92 | 1,87 | 1,84 | 1,80 | 1,77 | 1,74 | 1,72 | 1,71 | 1,71 |
| 37                  | 7,77 | 5,57                          | 4,68 | 4,18 | 3,86 | 3,63 | 3,46 | 3,32 | 3,21 | 3,13 | 3,05 | 2,99 | 2,89 | 2,81 | 2,70 | 2,62 | 2,54 | 2,45 | 2,40 | 2,32 | 2,29 | 2,23 | 2,19 | 2,17 | 2,17 |
| 38                  | 4,22 | 3,37                          | 2,98 | 2,74 | 2,59 | 2,47 | 2,39 | 2,32 | 2,27 | 2,22 | 2,18 | 2,15 | 2,10 | 2,05 | 1,99 | 1,95 | 1,90 | 1,85 | 1,82 | 1,78 | 1,76 | 1,72 | 1,70 | 1,69 | 1,69 |
| 39                  | 7,72 | 5,53                          | 4,64 | 4,14 | 3,82 | 3,59 | 3,42 | 3,29 | 3,17 | 3,09 | 3,02 | 2,96 | 2,86 | 2,77 | 2,66 | 2,58 | 2,50 | 2,41 | 2,36 | 2,29 | 2,25 | 2,19 | 2,15 | 2,13 | 2,13 |

| V <sub>2</sub> = dk |      | V <sub>1</sub> = dk pembilang |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------|------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Penyebut            |      | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 14   | 16   | 20   | 24   | 30   | 40   | 50   | 75   | 100  | 200  | 500  | 0    |
| 12                  | 4,75 | 3,88                          | 3,49 | 3,25 | 3,11 | 3,00 | 2,92 | 2,85 | 2,80 | 2,76 | 2,72 | 2,69 | 2,64 | 2,60 | 2,54 | 2,50 | 2,46 | 2,42 | 2,40 | 2,36 | 2,35 | 2,32 | 2,31 | 2,31 | 2,36 |
| 13                  | 9,33 | 6,93                          | 5,95 | 5,41 | 5,05 | 4,82 | 4,65 | 4,50 | 4,39 | 4,30 | 4,22 | 4,16 | 4,05 | 3,98 | 3,86 | 3,78 | 3,70 | 3,61 | 3,56 | 3,49 | 3,46 | 3,41 | 3,38 | 3,38 | 3,36 |
| 14                  | 4,67 | 3,80                          | 3,41 | 3,18 | 3,02 | 2,92 | 2,84 | 2,77 | 2,72 | 2,67 | 2,63 | 2,60 | 2,55 | 2,51 | 2,46 | 2,42 | 2,38 | 2,34 | 2,32 | 2,28 | 2,26 | 2,24 | 2,22 | 2,21 | 2,21 |
| 15                  | 9,07 | 6,71                          | 5,74 | 5,20 | 4,86 | 4,62 | 4,44 | 4,30 | 4,19 | 4,10 | 4,02 | 3,96 | 3,85 | 3,78 | 3,67 | 3,59 | 3,51 | 3,42 | 3,37 | 3,30 | 3,27 | 3,24 | 3,21 | 3,18 | 3,16 |
| 16                  | 4,60 | 3,74                          | 3,34 | 3,11 | 2,96 | 2,85 | 2,77 | 2,70 | 2,65 | 2,60 | 2,56 | 2,53 | 2,48 | 2,44 | 2,39 | 2,35 | 2,31 | 2,27 | 2,24 | 2,21 | 2,19 | 2,16 | 2,14 | 2,14 | 2,13 |
| 17                  | 8,65 | 6,51                          | 5,56 | 5,03 | 4,69 | 4,46 | 4,28 | 4,14 | 4,03 | 3,94 | 3,86 | 3,80 | 3,70 | 3,62 | 3,51 | 3,43 | 3,34 | 3,26 | 3,21 | 3,14 | 3,11 | 3,08 | 3,02 | 3,00 | 3,00 |
| 18                  | 4,54 | 3,68                          | 3,29 | 3,06 | 2,90 | 2,79 | 2,70 | 2,64 | 2,59 | 2,55 | 2,51 | 2,48 | 2,43 | 2,39 | 2,33 | 2,28 | 2,24 | 2,20 | 2,16 | 2,13 | 2,09 | 2,07 | 2,04 | 2,02 | 2,02 |
| 19                  | 8,68 | 6,35                          | 5,42 | 4,89 | 4,56 | 4,32 | 4,14 | 4,00 | 3,89 | 3,80 | 3,73 | 3,67 | 3,56 | 3,48 | 3,36 | 3,29 | 3,20 | 3,12 | 3,07 | 3,00 | 2,97 | 2,92 | 2,89 | 2,87 | 2,87 |
| 20                  | 4,49 | 3,63                          | 3,24 | 3,01 | 2,85 | 2,74 | 2,66 | 2,59 | 2,54 | 2,49 | 2,45 | 2,42 | 2,37 | 2,33 | 2,28 | 2,24 | 2,20 | 2,16 | 2,13 | 2,09 | 2,07 | 2,04 | 2,02 | 2,00 | 2,00 |
| 21                  | 8,53 | 6,23                          | 5,29 | 4,77 | 4,44 | 4,20 | 4,03 | 3,89 | 3,78 | 3,69 | 3,61 | 3,55 | 3,45 | 3,37 | 3,25 | 3,18 | 3,10 | 3,01 | 2,96 | 2,89 | 2,86 | 2,80 | 2,77 | 2,75 | 2,75 |
| 22                  | 4,45 | 3,59                          | 3,20 | 2,96 | 2,81 | 2,70 | 2,62 | 2,55 | 2,50 | 2,45 | 2,41 | 2,38 | 2,33 | 2,29 | 2,23 | 2,19 | 2,15 | 2,11 | 2,08 | 2,04 | 2,02 | 1,99 | 1,97 | 1,96 | 1,96 |
| 23                  | 8,40 | 6,11                          | 5,18 | 4,67 | 4,34 | 4,10 | 3,93 | 3,79 | 3,68 | 3,59 | 3,52 | 3,45 | 3,35 | 3,27 | 3,16 | 3,08 | 3,00 | 2,92 | 2,86 | 2,79 | 2,76 | 2,70 | 2,67 | 2,65 | 2,65 |
| 24                  | 4,41 | 3,55                          | 3,16 | 2,93 | 2,77 | 2,66 | 2,58 | 2,51 | 2,46 | 2,41 | 2,37 | 2,34 | 2,29 | 2,25 | 2,19 | 2,15 | 2,11 | 2,07 | 2,04 | 2,00 | 1,98 | 1,95 | 1,93 | 1,92 | 1,92 |
| 25                  | 8,28 | 6,01                          | 5,09 | 4,58 | 4,25 | 4,01 | 3,85 | 3,71 | 3,60 | 3,51 | 3,44 | 3,37 | 3,27 | 3,19 | 3,07 | 3,00 | 2,91 | 2,83 | 2,78 | 2,71 | 2,68 | 2,62 | 2,59 | 2,57 | 2,57 |
| 26                  | 4,38 | 3,52                          | 3,13 | 2,90 | 2,74 | 2,63 | 2,55 | 2,48 | 2,43 | 2,38 | 2,34 | 2,31 | 2,26 | 2,21 | 2,15 | 2,11 | 2,07 | 2,02 | 2,00 | 1,96 | 1,94 | 1,91 | 1,90 | 1,88 | 1,88 |
| 27                  | 8,18 | 5,93                          | 5,01 | 4,50 | 4,17 | 3,94 | 3,77 | 3,63 | 3,52 | 3,43 | 3,36 | 3,30 | 3,19 | 3,12 | 3,00 | 2,92 | 2,84 | 2,76 | 2,70 | 2,63 | 2,60 | 2,54 | 2,51 | 2,49 | 2,49 |
| 28                  | 4,35 | 3,49                          | 3,10 | 2,87 | 2,71 | 2,60 | 2,52 | 2,45 | 2,40 | 2,35 | 2,31 | 2,28 | 2,23 | 2,18 | 2,12 | 2,06 | 2,04 | 1,99 | 1,95 | 1,92 | 1,90 | 1,87 | 1,85 | 1,84 | 1,84 |
| 29                  | 8,10 | 5,85                          | 4,94 | 4,43 | 4,1  | 3,87 | 3,71 | 3,58 | 3,45 | 3,37 | 3,30 | 3,23 | 3,13 | 3,05 | 2,94 | 2,86 | 2,77 | 2,69 | 2,63 | 2,56 | 2,53 | 2,47 | 2,44 | 2,42 | 2,42 |
| 30                  | 4,32 | 3,47                          | 3,07 | 2,84 | 2,68 | 2,57 | 2,49 | 2,42 | 2,37 | 2,32 | 2,28 | 2,25 | 2,20 | 2,15 | 2,09 | 2,05 | 2,00 | 1,96 | 1,93 | 1,89 | 1,87 | 1,84 | 1,82 | 1,81 | 1,81 |
| 31                  | 8,02 | 5,78                          | 4,87 | 4,37 | 4,04 | 3,81 | 3,65 | 3,51 | 3,40 | 3,31 | 3,24 | 3,17 | 3,07 | 2,99 | 2,88 | 2,80 | 2,72 | 2,63 | 2,58 | 2,51 | 2,47 | 2,42 | 2,38 | 2,36 | 2,36 |
| 32                  | 4,30 | 3,44                          | 3,05 | 2,82 | 2,66 | 2,55 | 2,47 | 2,40 | 2,35 | 2,30 | 2,26 | 2,23 | 2,18 | 2,13 | 2,07 | 2,03 | 1,98 | 1,93 | 1,91 | 1,87 | 1,84 | 1,81 | 1,80 | 1,78 | 1,78 |
| 33                  | 7,94 | 5,72                          | 4,82 | 4,31 | 3,99 | 3,76 | 3,59 | 3,45 | 3,35 | 3,26 | 3,18 | 3,12 | 3,02 | 2,94 | 2,83 | 2,75 | 2,67 | 2,58 | 2,53 | 2,46 | 2,42 | 2,37 | 2,33 | 2,31 | 2,31 |
| 34                  | 4,29 | 3,42                          | 3,03 | 2,80 | 2,64 | 2,53 | 2,45 | 2,38 | 2,32 | 2,28 | 2,24 | 2,20 | 2,14 | 2,10 | 2,04 | 2,00 | 1,95 | 1,91 | 1,88 | 1,84 | 1,82 | 1,79 | 1,77 | 1,76 | 1,76 |
| 35                  | 7,88 | 5,66                          | 4,76 | 4,25 | 3,94 | 3,71 | 3,54 | 3,41 | 3,30 | 3,21 | 3,14 | 3,07 | 2,97 | 2,89 | 2,78 | 2,70 | 2,62 | 2,53 | 2,48 | 2,41 | 2,37 | 2,32 | 2,28 | 2,26 | 2,26 |
| 36                  | 4,26 | 3,40                          | 3,01 | 2,78 | 2,62 | 2,51 | 2,43 | 2,36 | 2,30 | 2,26 | 2,22 | 2,18 | 2,13 | 2,09 | 2,02 | 1,96 | 1,94 | 1,89 | 1,86 | 1,82 | 1,80 | 1,76 | 1,74 | 1,73 | 1,73 |
| 37                  | 7,82 | 5,61                          | 4,72 | 4,22 | 3,90 | 3,67 | 3,50 | 3,36 | 3,25 | 3,17 | 3,09 | 3,03 | 2,93 | 2,85 | 2,74 | 2,66 | 2,58 | 2,49 | 2,44 | 2,36 | 2,33 | 2,27 | 2,23 | 2,21 | 2,21 |
| 38                  | 4,24 | 3,38                          | 2,99 | 2,75 | 2,60 | 2,49 | 2,41 | 2,34 | 2,28 | 2,24 | 2,20 | 2,16 | 2,11 | 2,06 | 2,00 | 1,96 | 1,92 | 1,87 | 1,84 | 1,80 | 1,77 | 1,74 | 1,72 | 1,71 | 1,71 |
| 39                  | 7,77 | 5,57                          | 4,68 | 4,18 | 3,86 | 3,63 | 3,46 | 3,32 | 3,21 | 3,13 | 3,05 | 2,99 | 2,89 | 2,81 | 2,70 | 2,62 | 2,54 | 2,45 | 2,40 | 2,32 | 2,29 | 2,23 | 2,19 | 2,17 | 2,17 |
| 40                  | 4,22 | 3,37                          | 2,98 | 2,74 | 2,59 | 2,47 | 2,39 | 2,32 | 2,27 | 2,22 | 2,18 | 2,15 | 2,10 | 2,05 | 1,99 | 1,95 | 1,90 | 1,85 | 1,82 | 1,78 | 1,76 | 1,72 | 1,70 | 1,69 | 1,69 |
| 41                  | 7,72 | 5,53                          | 4,64 | 4,14 | 3,82 | 3,59 | 3,42 | 3,29 | 3,17 | 3,09 | 3,02 | 2,96 | 2,86 | 2,77 | 2,66 | 2,58 | 2,50 | 2,41 | 2,36 | 2,29 | 2,25 | 2,21 | 2,19 | 2,15 | 2,15 |



| V <sub>i</sub> = dk |      | V <sub>i</sub> = dk pembiasan |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |
|---------------------|------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| Penyebut            |      | 1                             | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 14   | 16   | 20   | 24   | 30   | 40   | 50   | 75   | 100  | 200  | 500  | 0 |
| 27                  | 4.21 | 3.35                          | 2.96 | 2.73 | 2.57 | 2.46 | 2.37 | 2.30 | 2.25 | 2.20 | 2.16 | 2.13 | 2.08 | 2.03 | 1.97 | 1.93 | 1.88 | 1.84 | 1.80 | 1.76 | 1.74 | 1.71 | 1.68 | 1.67 |   |
|                     | 7.68 | 5.49                          | 4.60 | 4.11 | 3.79 | 3.56 | 3.39 | 3.26 | 3.14 | 3.06 | 2.98 | 2.93 | 2.83 | 2.74 | 2.63 | 2.55 | 2.47 | 2.38 | 2.23 | 2.25 | 2.21 | 2.16 | 2.12 | 2.10 |   |
| 28                  | 4.20 | 3.34                          | 2.95 | 2.71 | 2.56 | 2.44 | 2.36 | 2.29 | 2.24 | 2.19 | 2.15 | 2.12 | 2.06 | 2.02 | 1.96 | 1.91 | 1.87 | 1.81 | 1.78 | 1.75 | 1.72 | 1.69 | 1.67 | 1.65 |   |
|                     | 7.64 | 5.45                          | 4.57 | 4.07 | 3.76 | 3.53 | 3.36 | 3.23 | 3.11 | 3.03 | 2.95 | 2.90 | 2.80 | 2.71 | 2.60 | 2.52 | 2.44 | 2.35 | 2.20 | 2.22 | 2.18 | 2.13 | 2.09 | 2.06 |   |
| 29                  | 4.18 | 3.33                          | 2.93 | 2.70 | 2.54 | 2.43 | 2.35 | 2.28 | 2.22 | 2.18 | 2.14 | 2.10 | 2.05 | 2.00 | 1.94 | 1.90 | 1.85 | 1.80 | 1.77 | 1.73 | 1.71 | 1.68 | 1.65 | 1.64 |   |
|                     | 7.60 | 5.42                          | 4.54 | 4.04 | 3.73 | 3.50 | 3.33 | 3.20 | 3.08 | 3.00 | 2.92 | 2.87 | 2.77 | 2.68 | 2.57 | 2.49 | 2.41 | 2.32 | 2.27 | 2.19 | 2.15 | 2.10 | 2.06 | 2.03 |   |
| 30                  | 4.17 | 3.32                          | 2.92 | 2.69 | 2.53 | 2.42 | 2.34 | 2.27 | 2.21 | 2.16 | 2.12 | 2.09 | 2.04 | 1.99 | 1.93 | 1.89 | 1.84 | 1.79 | 1.76 | 1.72 | 1.69 | 1.66 | 1.64 | 1.62 |   |
|                     | 7.56 | 5.39                          | 4.51 | 4.02 | 3.70 | 3.47 | 3.30 | 3.17 | 3.05 | 2.98 | 2.90 | 2.84 | 2.74 | 2.66 | 2.55 | 2.47 | 2.38 | 2.29 | 2.24 | 2.16 | 2.13 | 2.07 | 2.03 | 2.01 |   |
| 32                  | 4.15 | 3.30                          | 2.90 | 2.67 | 2.51 | 2.40 | 2.32 | 2.25 | 2.19 | 2.14 | 2.10 | 2.07 | 2.02 | 1.97 | 1.91 | 1.86 | 1.82 | 1.76 | 1.74 | 1.69 | 1.67 | 1.64 | 1.61 | 1.59 |   |
|                     | 7.50 | 5.34                          | 4.46 | 3.97 | 3.66 | 3.42 | 3.25 | 3.12 | 3.01 | 2.94 | 2.86 | 2.80 | 2.70 | 2.62 | 2.51 | 2.42 | 2.34 | 2.25 | 2.20 | 2.12 | 2.08 | 2.02 | 1.98 | 1.96 |   |
| 34                  | 4.13 | 3.28                          | 2.88 | 2.65 | 2.49 | 2.38 | 2.30 | 2.23 | 2.17 | 2.12 | 2.08 | 2.05 | 2.00 | 1.95 | 1.89 | 1.84 | 1.80 | 1.74 | 1.71 | 1.67 | 1.64 | 1.61 | 1.59 | 1.57 |   |
|                     | 7.44 | 5.29                          | 4.42 | 3.93 | 3.61 | 3.38 | 3.21 | 3.08 | 2.97 | 2.89 | 2.82 | 2.76 | 2.66 | 2.58 | 2.47 | 2.38 | 2.30 | 2.21 | 2.15 | 2.08 | 2.04 | 1.98 | 1.94 | 1.91 |   |
| 36                  | 4.11 | 3.26                          | 2.86 | 2.63 | 2.48 | 2.36 | 2.28 | 2.21 | 2.15 | 2.10 | 2.06 | 2.03 | 1.98 | 1.93 | 1.87 | 1.82 | 1.78 | 1.72 | 1.69 | 1.65 | 1.62 | 1.59 | 1.56 | 1.55 |   |
|                     | 7.39 | 5.25                          | 4.38 | 3.89 | 3.58 | 3.35 | 3.18 | 3.04 | 2.94 | 2.86 | 2.78 | 2.72 | 2.62 | 2.54 | 2.43 | 2.35 | 2.26 | 2.17 | 2.12 | 2.04 | 2.00 | 1.94 | 1.9  | 1.87 |   |
| 38                  | 4.10 | 3.25                          | 2.85 | 2.62 | 2.46 | 2.35 | 2.26 | 2.19 | 2.14 | 2.09 | 2.05 | 2.02 | 1.96 | 1.92 | 1.85 | 1.80 | 1.76 | 1.71 | 1.67 | 1.63 | 1.6  | 1.57 | 1.54 | 1.53 |   |
|                     | 7.35 | 5.21                          | 4.34 | 3.86 | 3.54 | 3.32 | 3.15 | 3.02 | 2.91 | 2.82 | 2.75 | 2.69 | 2.59 | 2.51 | 2.40 | 2.32 | 2.22 | 2.14 | 2.08 | 2.00 | 1.97 | 1.90 | 1.86 | 1.84 |   |
| 40                  | 4.08 | 3.23                          | 2.84 | 2.61 | 2.45 | 2.34 | 2.25 | 2.18 | 2.12 | 2.07 | 2.04 | 2.00 | 1.95 | 1.90 | 1.84 | 1.79 | 1.74 | 1.69 | 1.66 | 1.61 | 1.59 | 1.55 | 1.53 | 1.51 |   |
|                     | 7.31 | 5.18                          | 4.31 | 3.83 | 3.51 | 3.29 | 3.12 | 2.99 | 2.88 | 2.80 | 2.73 | 2.66 | 2.56 | 2.49 | 2.37 | 2.29 | 2.20 | 2.11 | 2.05 | 1.97 | 1.94 | 1.88 | 1.84 | 1.81 |   |
| 42                  | 4.07 | 3.22                          | 2.83 | 2.59 | 2.44 | 2.32 | 2.24 | 2.17 | 2.11 | 2.06 | 2.02 | 1.99 | 1.94 | 1.89 | 1.82 | 1.78 | 1.73 | 1.68 | 1.64 | 1.6  | 1.57 | 1.54 | 1.51 | 1.49 |   |
|                     | 7.27 | 5.15                          | 4.29 | 3.80 | 3.49 | 3.26 | 3.10 | 2.95 | 2.86 | 2.77 | 2.70 | 2.64 | 2.54 | 2.46 | 2.35 | 2.26 | 2.17 | 2.08 | 2.02 | 1.94 | 1.91 | 1.85 | 1.80 | 1.78 |   |
| 44                  | 4.06 | 3.21                          | 2.82 | 2.58 | 2.43 | 2.31 | 2.23 | 2.16 | 2.10 | 2.05 | 2.01 | 1.98 | 1.92 | 1.88 | 1.81 | 1.76 | 1.72 | 1.66 | 1.63 | 1.58 | 1.56 | 1.52 | 1.50 | 1.48 |   |
|                     | 7.24 | 5.12                          | 4.26 | 3.78 | 3.46 | 3.24 | 3.07 | 2.94 | 2.84 | 2.75 | 2.68 | 2.62 | 2.52 | 2.44 | 2.32 | 2.24 | 2.15 | 2.06 | 2.00 | 1.92 | 1.88 | 1.82 | 1.78 | 1.75 |   |
| 46                  | 4.05 | 3.20                          | 2.81 | 2.57 | 2.42 | 2.30 | 2.22 | 2.14 | 2.09 | 2.04 | 2.00 | 1.97 | 1.91 | 1.87 | 1.80 | 1.75 | 1.71 | 1.65 | 1.62 | 1.57 | 1.54 | 1.51 | 1.48 | 1.46 |   |
|                     | 7.21 | 5.10                          | 4.24 | 3.76 | 3.44 | 3.22 | 3.05 | 2.92 | 2.82 | 2.73 | 2.66 | 2.60 | 2.50 | 2.42 | 2.30 | 2.22 | 2.13 | 2.04 | 1.98 | 1.90 | 1.85 | 1.80 | 1.76 | 1.72 |   |
| 48                  | 4.04 | 3.19                          | 2.80 | 2.56 | 2.41 | 2.30 | 2.21 | 2.14 | 2.08 | 2.03 | 1.99 | 1.96 | 1.90 | 1.86 | 1.79 | 1.74 | 1.70 | 1.64 | 1.61 | 1.56 | 1.53 | 1.50 | 1.47 | 1.45 |   |
|                     | 7.19 | 5.08                          | 4.22 | 3.74 | 3.42 | 3.20 | 3.04 | 2.90 | 2.80 | 2.71 | 2.64 | 2.58 | 2.48 | 2.40 | 2.28 | 2.20 | 2.11 | 2.02 | 1.96 | 1.88 | 1.84 | 1.78 | 1.73 | 1.70 |   |
| 50                  | 4.03 | 3.18                          | 2.79 | 2.56 | 2.40 | 2.29 | 2.20 | 2.13 | 2.07 | 2.02 | 1.98 | 1.95 | 1.90 | 1.85 | 1.78 | 1.74 | 1.69 | 1.63 | 1.60 | 1.55 | 1.52 | 1.48 | 1.46 | 1.44 |   |
|                     | 7.17 | 5.06                          | 4.20 | 3.72 | 3.41 | 3.18 | 3.02 | 2.88 | 2.78 | 2.70 | 2.62 | 2.56 | 2.46 | 2.39 | 2.26 | 2.18 | 2.10 | 2.00 | 1.94 | 1.86 | 1.82 | 1.76 | 1.71 | 1.68 |   |
| 55                  | 4.02 | 3.17                          | 2.78 | 2.54 | 2.38 | 2.27 | 2.18 | 2.11 | 2.05 | 2.00 | 1.97 | 1.93 | 1.88 | 1.83 | 1.76 | 1.72 | 1.67 | 1.61 | 1.58 | 1.52 | 1.50 | 1.46 | 1.43 | 1.41 |   |
|                     | 7.12 | 5.01                          | 4.16 | 3.68 | 3.37 | 3.15 | 2.98 | 2.85 | 2.75 | 2.66 | 2.59 | 2.53 | 2.43 | 2.35 | 2.23 | 2.15 | 2.06 | 1.96 | 1.90 | 1.82 | 1.78 | 1.71 | 1.66 | 1.64 |   |

| V <sub>p</sub> - dk | V <sub>i</sub> = dk pemertiang |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|---------------------|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
|                     | 1                              | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 14   | 16   | 20   | 24   | 30   | 40   | 50   | 75   | 100  | 200  | 500  | 0    |  |
| Penyebut            |                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 60                  | 4,00                           | 3,15 | 2,76 | 2,52 | 2,37 | 2,25 | 2,17 | 2,10 | 2,04 | 1,99 | 1,95 | 1,92 | 1,86 | 1,81 | 1,75 | 1,70 | 1,65 | 1,59 | 1,56 | 1,50 | 1,48 | 1,44 | 1,41 | 1,39 |  |
|                     | 7,08                           | 4,89 | 4,13 | 3,65 | 3,34 | 3,12 | 2,95 | 2,82 | 2,72 | 2,63 | 2,56 | 2,50 | 2,40 | 2,32 | 2,20 | 2,12 | 2,03 | 1,93 | 1,87 | 1,79 | 1,74 | 1,68 | 1,63 | 1,60 |  |
| 65                  | 3,69                           | 3,14 | 2,75 | 2,51 | 2,35 | 2,24 | 2,15 | 2,08 | 2,02 | 1,98 | 1,94 | 1,90 | 1,85 | 1,80 | 1,73 | 1,68 | 1,63 | 1,57 | 1,54 | 1,49 | 1,46 | 1,42 | 1,39 | 1,37 |  |
|                     | 7,04                           | 4,95 | 4,10 | 3,62 | 3,31 | 3,09 | 2,93 | 2,79 | 2,70 | 2,61 | 2,54 | 2,47 | 2,37 | 2,30 | 2,18 | 2,09 | 2,00 | 1,90 | 1,84 | 1,76 | 1,71 | 1,64 | 1,60 | 1,56 |  |
| 70                  | 3,98                           | 3,13 | 2,74 | 2,50 | 2,35 | 2,23 | 2,14 | 2,07 | 2,01 | 1,97 | 1,93 | 1,89 | 1,84 | 1,79 | 1,72 | 1,67 | 1,62 | 1,56 | 1,53 | 1,47 | 1,45 | 1,40 | 1,37 | 1,35 |  |
|                     | 7,01                           | 2,92 | 4,08 | 3,60 | 3,29 | 3,07 | 2,91 | 2,77 | 2,67 | 2,59 | 2,51 | 2,45 | 2,35 | 2,28 | 2,15 | 2,07 | 1,98 | 1,88 | 1,82 | 1,74 | 1,69 | 1,62 | 1,56 | 1,53 |  |
| 80                  | 3,96                           | 3,11 | 2,72 | 2,48 | 2,33 | 2,21 | 2,12 | 2,05 | 1,99 | 1,95 | 1,91 | 1,88 | 1,82 | 1,77 | 1,70 | 1,65 | 1,60 | 1,54 | 1,51 | 1,45 | 1,42 | 1,38 | 1,35 | 1,32 |  |
|                     | 6,96                           | 4,88 | 4,04 | 3,56 | 3,25 | 3,04 | 2,87 | 2,74 | 2,64 | 2,55 | 2,48 | 2,41 | 2,32 | 2,24 | 2,11 | 2,03 | 1,94 | 1,84 | 1,78 | 1,70 | 1,65 | 1,57 | 1,52 | 1,49 |  |
| 100                 | 3,94                           | 3,09 | 2,70 | 2,46 | 2,30 | 2,19 | 2,10 | 2,03 | 1,97 | 1,92 | 1,88 | 1,85 | 1,79 | 1,75 | 1,68 | 1,63 | 1,57 | 1,51 | 1,48 | 1,42 | 1,39 | 1,34 | 1,30 | 1,28 |  |
|                     | 6,90                           | 4,82 | 3,98 | 3,51 | 3,20 | 2,99 | 2,82 | 2,69 | 2,59 | 2,51 | 2,43 | 2,36 | 2,28 | 2,19 | 2,06 | 1,98 | 1,89 | 1,79 | 1,73 | 1,64 | 1,59 | 1,51 | 1,46 | 1,43 |  |
| 125                 | 3,92                           | 3,07 | 2,68 | 2,44 | 2,29 | 2,17 | 2,08 | 2,01 | 1,95 | 1,90 | 1,86 | 1,83 | 1,77 | 1,72 | 1,65 | 1,60 | 1,55 | 1,49 | 1,45 | 1,39 | 1,36 | 1,31 | 1,27 | 1,25 |  |
|                     | 6,84                           | 4,78 | 3,94 | 3,47 | 3,17 | 2,95 | 2,79 | 2,65 | 2,56 | 2,47 | 2,40 | 2,33 | 2,23 | 2,15 | 2,03 | 1,94 | 1,85 | 1,75 | 1,68 | 1,59 | 1,54 | 1,46 | 1,40 | 1,37 |  |
| 150                 | 3,91                           | 3,06 | 2,67 | 2,43 | 2,27 | 2,16 | 2,07 | 2,00 | 1,94 | 1,89 | 1,85 | 1,82 | 1,76 | 1,71 | 1,64 | 1,59 | 1,54 | 1,47 | 1,44 | 1,37 | 1,34 | 1,29 | 1,25 | 1,22 |  |
|                     | 6,81                           | 4,75 | 3,91 | 3,44 | 3,14 | 2,92 | 2,76 | 2,62 | 2,53 | 2,44 | 2,37 | 2,30 | 2,22 | 2,12 | 2,00 | 1,91 | 1,83 | 1,72 | 1,66 | 1,56 | 1,51 | 1,43 | 1,37 | 1,33 |  |
| 200                 | 3,89                           | 3,04 | 2,65 | 2,41 | 2,26 | 2,14 | 2,05 | 1,98 | 1,92 | 1,87 | 1,83 | 1,8  | 1,74 | 1,69 | 1,62 | 1,57 | 1,52 | 1,45 | 1,42 | 1,35 | 1,32 | 1,26 | 1,22 | 1,19 |  |
|                     | 6,76                           | 4,71 | 3,88 | 3,41 | 3,11 | 2,9  | 2,73 | 2,60 | 2,50 | 2,41 | 2,34 | 2,28 | 2,17 | 2,09 | 1,97 | 1,88 | 1,79 | 1,69 | 1,62 | 1,53 | 1,48 | 1,39 | 1,33 | 1,28 |  |
| 400                 | 3,86                           | 3,02 | 2,62 | 2,39 | 2,23 | 2,12 | 2,03 | 1,96 | 1,90 | 1,85 | 1,81 | 1,78 | 1,72 | 1,67 | 1,60 | 1,54 | 1,49 | 1,42 | 1,38 | 1,32 | 1,28 | 1,22 | 1,16 | 1,13 |  |
|                     | 6,70                           | 4,66 | 3,83 | 3,36 | 3,06 | 2,85 | 2,69 | 2,55 | 2,46 | 2,37 | 2,29 | 2,23 | 2,12 | 2,04 | 1,92 | 1,84 | 1,74 | 1,64 | 1,57 | 1,47 | 1,42 | 1,32 | 1,24 | 1,19 |  |
| 1000                | 3,85                           | 3,00 | 2,61 | 2,38 | 2,22 | 2,10 | 2,02 | 1,95 | 1,89 | 1,84 | 1,80 | 1,76 | 1,70 | 1,65 | 1,58 | 1,53 | 1,47 | 1,41 | 1,36 | 1,30 | 1,26 | 1,19 | 1,13 | 1,08 |  |
|                     | 6,65                           | 4,62 | 3,80 | 3,34 | 3,04 | 2,82 | 2,66 | 2,53 | 2,43 | 2,35 | 2,26 | 2,20 | 2,09 | 2,01 | 1,89 | 1,81 | 1,71 | 1,61 | 1,54 | 1,44 | 1,38 | 1,28 | 1,19 | 1,11 |  |
| ∞                   | 3,84                           | 2,99 | 2,60 | 2,37 | 2,21 | 2,09 | 2,01 | 1,94 | 1,88 | 1,83 | 1,79 | 1,75 | 1,69 | 1,64 | 1,57 | 1,52 | 1,46 | 1,40 | 1,35 | 1,28 | 1,24 | 1,17 | 1,11 | 1,00 |  |
|                     | 6,64                           | 4,60 | 3,78 | 3,32 | 3,02 | 2,80 | 2,64 | 2,51 | 2,41 | 2,32 | 2,24 | 2,18 | 2,07 | 1,99 | 1,87 | 1,79 | 1,69 | 1,59 | 1,52 | 1,41 | 1,36 | 1,25 | 1,15 | 1,00 |  |