**LAMPIRAN F**

**UJI VALIDITAS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NO** | **KODE** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **JL Y** | **Y^2** |  |  |  |
| **1** | A | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 16 | 256 |  |  |  |
| **2** | B | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 16 | 256 |  |  |  |
| **3** | C | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 16 | 256 |  |  |  |
| **4** | D | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 17 | 289 |  |  |  |
| **5** | E | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12 | 144 |  |  |  |
| **6** | F | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 | 324 |  |  |  |
| **7** | G | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | 144 |  |  |  |
| **8** | H | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 15 | 225 |  |  |  |
| **9** | I | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 15 | 225 |  |  |  |
| **10** | J | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 15 | 225 |  |  |  |
| **11** | K | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 18 | 324 |  |  |  |
| **12** | L | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 16 | 256 |  |  |  |
| **13** | M | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 15 | 225 |  |  |  |
| **14** | N | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 15 | 225 |  |  |  |
| **15** | O | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 15 | 225 |  |  |  |
| **16** | P | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 16 | 256 |  |  |  |
| **17** | Q | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 14 | 196 |  |  |  |
| **18** | R | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 14 | 196 |  |  |  |
| **19** | S | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 14 | 196 |  |  |  |
| **20** | T | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 12 | 144 |  |  |  |
| **21** | U | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 | 169 |  |  |  |
| **22** | V | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 14 | 196 |  |  |  |
| **23** | W | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 13 | 169 |  |  |  |
| **24** | X | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 | 324 |  |  |  |
| **25** | Y | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | 144 |  |  |  |
| **26** | Z | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 15 | 225 |  |  |  |
| **27** | A1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 14 | 196 |  |  |  |
| **28** | B1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 17 | 289 |  |  |  |
| **29** | C1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 17 | 289 |  |  |  |
| **30** | D1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 | 324 |  |  |  |
| **31** | E1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 15 | 225 |  |  |  |
| **32** | F1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 12 | 144 |  |  |  |
| **33** | G1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | 144 |  |  |  |
| **34** | H1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 | 324 |  |  |  |
| **35** | I1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 16 | 256 | (∑Y^2)/n | 75.613 |
|  | JLH | 33 | 33 | 31 | 19 | 24 | 23 | 28 | 24 | 31 | 27 | 29 | 29 | 27 | 26 | 25 | 29 | 20 | 16 | 27 | 24 | 525 | 2344 |  |  |  |
|  | p | 0.9 | 0.9 | 0.9 | 0.5 | 0.7 | 0.7 | 0.8 | 0.7 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.8 | 0.6 | 0.5 | 0.8 | 0.7 |  |  | (∑Y/10)^2 | 286.81 |
|  | q | 0.1 | 0.1 | 0.1 | 0.5 | 0.3 | 0.3 | 0.2 | 0.3 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.4 | 0.5 | 0.2 | 0.3 |  |  |  |  |  |
|  | √(p/q) | 4.062 | 4.062 | 2.784 | 1.090 | 1.477 | 1.384 | 2.000 | 1.477 | 2.784 | 1.837 | 2.198 | 2.198 | 1.837 | 1.700 | 1.581 | 2.198 | 1.155 | 0.918 | 1.837 | 1.477 |  |  |  |  |  |
|  | Mp | 15.138 | 15.148 | 15.222 | 14.875 | 15.048 | 15.750 | 15.577 | 15.391 | 15.111 | 15.292 | 15.308 | 15.160 | 14.960 | 15.696 | 15.696 | 15.240 | 15.667 | 22.071 | 15.333 | 15.364 | 313.046 |  |  |  |  |
|  | Mt |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 16.9355 |  |  |  |  |
|  | St |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 14.533 |  |  |  |  |
|  | r-pbis | 0.502 | 0.500 | 0.328 | 0.155 | 0.192 | 0.113 | 0.187 | 0.157 | 0.349 | 0.208 | 0.246 | 0.269 | 0.250 | 0.145 | 0.135 | 0.256 | 0.101 | 0.324 | 0.203 | 0.160 |  |  |  |  |  |
|  | r-t | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 | 0.468 |  |  |  |  |  |
|  | V/IV | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V |  |  |  |  |  |

**LAMPIRAN G**

**PERHITUNGAN UJI VALIDITAS**

Untuk mengetahui validitas tes hasil belajar siswa berikut data-data yang diketahui :

∑Y = 468 = 15,14

∑Y2 = 2344 n = 35

Untuk menghitung validitas tes sebagai berikut :

Penyelesaian :

* Mean dari skor total

=

=

= 13,37

* Deviasi standar total

=

=

=

=

= 4,27

* Koefisien korelasi point biseral

Rpbi  =

=

=

= 0,41

= 0,41 (3)

= 1,23

Dari perhitungan di atas dapat dikatakan bahwa rhitung > rtabel yakni 1,23 > 0,334. Maka soal nomor 1 dinyatakan valid.

**LAMPIRAN H**

**UJI RELIABILITAS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NO** | **KODE** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **JL Y** | **Y^2** |
| **1** | A | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 16 | 256 |
| **2** | B | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 16 | 256 |
| **3** | C | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 16 | 256 |
| **4** | D | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 17 | 289 |
| **5** | E | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12 | 144 |
| **6** | F | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 | 324 |
| **7** | G | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | 144 |
| **8** | H | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 15 | 225 |
| **9** | I | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 15 | 225 |
| **10** | J | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 15 | 225 |
| **11** | K | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 18 | 324 |
| **12** | L | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 16 | 256 |
| **13** | M | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 15 | 225 |
| **14** | N | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 15 | 225 |
| **15** | O | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 15 | 225 |
| **16** | P | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 17 | 289 |
| **17** | Q | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 14 | 196 |
| **18** | R | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 14 | 196 |
| **19** | S | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 15 | 225 |
| **20** | T | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 12 | 144 |
| **21** | U | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 | 169 |
| **22** | V | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 14 | 196 |
| **23** | W | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 13 | 169 |
| **24** | X | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 | 324 |
| **25** | Y | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | 144 |
| **26** | Z | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 15 | 225 |
| **27** | A1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 14 | 196 |
| **28** | B1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 17 | 289 |
| **29** | C1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 17 | 289 |
| **30** | B1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 17 | 289 |
| **31** | T | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 12 | 144 |
| **32** | W | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 13 | 169 |
| **33** | O | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 15 | 225 |
| **34** | D1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 18 | 324 |
| **35** | E1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 16 | 256 |
|  | JLH | 33 | 33 | 30 | 17 | 24 | 22 | 29 | 26 | 31 | 27 | 29 | 28 | 28 | 25 | 26 | 27 | 21 | 16 | 31 | 24 | 527 | 2344 |
|  | ∑X | 33 | 33 | 30 | 17 | 24 | 22 | 29 | 26 | 31 | 27 | 29 | 28 | 28 | 25 | 26 | 27 | 21 | 16 | 31 | 24 | 527 | 2344 |
|  | ∑X² | 1089 | 1089 | 900 | 289 | 576 | 484 | 841 | 676 | 961 | 729 | 841 | 784 | 784 | 625 | 676 | 729 | 441 | 256 | 961 | 576 |  |  |
|  | (∑X²)/N | 39531 | 38256 | 26129 | 2694.2 | 10702 | 7556.6 | 22816 | 14741 | 29791 | 17143 | 22816 | 19828 | 19828 | 12601 | 14741 | 17143 | 6273.6 | 2114.1 | 29791 | 10702 |  | 8959 |
|  | σᵼ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 220.5 |
|  | p | 0.9 | 0.9 | 0.9 | 0.5 | 0.7 | 0.6 | 0.8 | 0.7 | 0.9 | 0.8 | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.8 | 0.6 | 0.5 | 0.9 | 0.7 |  |  |
|  | q | 0.1 | 0.1 | 0.1 | 0.5 | 0.3 | 0.4 | 0.2 | 0.3 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.4 | 0.5 | 0.1 | 0.3 |  |  |
|  | p\*q | 0.054 | 0.054 | 0.122 | 0.250 | 0.216 | 0.233 | 0.142 | 0.191 | 0.101 | 0.176 | 0.142 | 0.160 | 0.160 | 0.204 | 0.191 | 0.176 | 0.240 | 0.248 | 0.101 | 0.216 | 3.378 |  |
|  | (σ-∑pq)/σ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.985 |  |
|  | r-11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.0186 |  |
|  | r-t |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.468 | **R** |

**LAMPIRAN I**

**PERHITUNGAN UJI RELIABILITAS**

Terlebih dahulu dicari standar deviasi dengan rumus :

S2 =

= )²

=

=

S2 = 2,24

Dengan menggunakan rumus KR-20 dihitung reliabilitas keseluruhan tes sebagai berikut :

r11 = () ()

= ( ) ()

= (1,03)(0,73)

=0,75

Dari perhitungan di atas maka diperoleh rhitung > rtabel 0,750 yakni > 0,334 jadi dapat disimpilkan bahwa soal tersebut secara keseluruhan adalah reliabel.

**LAMPIRAN J**

**UJI KESUKARAN**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NO** | **KODE** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **JL Y** | **Y^2** |
| **1** | A | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 16 | 256 |
| **2** | B | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 13 | 169 |
| **3** | C | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 14 | 196 |
| **4** | D | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 13 | 169 |
| **5** | E | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 49 |
| **6** | F | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 16 | 256 |
| **7** | G | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11 | 121 |
| **8** | H | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 13 | 169 |
| **9** | I | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 11 | 121 |
| **10** | J | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 8 | 64 |
| **11** | K | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 12 | 144 |
| **12** | L | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 9 | 81 |
| **13** | M | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 12 | 144 |
| **14** | N | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 10 | 100 |
| **15** | O | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 13 | 169 |
| **16** | P | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 12 | 144 |
| **17** | Q | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 10 | 100 |
| **18** | R | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 9 | 81 |
| **19** | S | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 13 | 169 |
| **20** | T | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 9 | 81 |
| **21** | U | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 10 | 100 |
| **22** | V | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 9 | 81 |
| **23** | W | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 12 | 144 |
| **24** | X | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 13 | 169 |
| **25** | Y | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | 144 |
| **26** | Z | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 11 | 121 |
| **27** | A1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 11 | 121 |
| **28** | B1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 13 | 169 |
| **29** | C1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 12 | 144 |
| **30** | D1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 14 | 196 |
| **31** | U | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 10 | 100 |
| **32** | I | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 11 | 121 |
| **33** | Q | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 10 | 100 |
| **34** | P | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 12 | 144 |
| **35** | E1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 14 | 196 |
|  | JLH | 21 | 19 | 20 | 18 | 19 | 22 | 22 | 19 | 22 | 22 | 17 | 22 | 21 | 20 | 26 | 23 | 21 | 18 | 21 | 12 | 405 | 1570 |
|  | P | 0.7 | 0.6333 | 0.6667 | 0.6 | 0.6333 | 0.7333 | 0.7333 | 0.6333 | 0.7333 | 0.7333 | 0.5667 | 0.7333 | 0.7 | 0.6667 | 0.8667 | 0.7667 | 0.7 | 0.6 | 0.7 | 0.4 |  |  |
|  |  | SE | SE | SE | SE | SE | SE | SE | SE | M | SE | SE | M | SE | SE | M | SE | SE | SE | SE | SU |  |  |

**LAMPIRAN K**

**PERHITUNGAN UJI KESUKARAN**

uk mengetahui sukar atau mudahnya suatu soal digunaan rumus proporsi atau indeks kesukaran. Adapun contoh perhitungan soal nomor 2 sebagai berikut :

Dik = B = 17

JS = 20

Dit = p ?

P =

=

= 0,85

Berdasarkan klarifikasi indeks kesukaran yang telah ditemukan maka dapat disimpulkan bahwa nomor 2 merupakan kategori soal sedang.

**LAMPIRAN L**

**UJI DAYA PEMBEDA**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NO** | **KODE** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **JL Y** | **Y^2** |
| **1** | A | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 18 | 324 |
| **2** | B | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 16 | 256 |
| **3** | C | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 | 361 |
| **4** | D | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 17 | 289 |
| **5** | E | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 14 | 196 |
| **6** | F | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 | 361 |
| **7** | G | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 14 | 196 |
| **8** | H | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 14 | 196 |
| **9** | I | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 15 | 225 |
| **10** | J | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 11 | 121 |
| **11** | K | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 15 | 225 |
| **12** | L | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 15 | 225 |
| **13** | M | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 15 | 225 |
| **14** | N | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 16 | 256 |
| **15** | O | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 16 | 256 |
| **16** | P | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 15 | 225 |
| **17** | Q | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 15 | 225 |
| **18** | R | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 17 | 289 |
|  | JA | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 |  |  |
|  | BA | 16 | 14 | 12 | 14 | 14 | 14 | 14 | 13 | 14 | 15 | 10 | 13 | 13 | 14 | 15 | 15 | 14 | 15 | 16 | 16 |  |  |
|  | PA | 0.8889 | 0.7778 | 0.6667 | 0.7778 | 0.7778 | 0.7778 | 0.7778 | 0.7222 | 0.7778 | 0.8333 | 0.5556 | 0.7222 | 0.7222 | 0.7778 | 0.8333 | 0.8333 | 0.7778 | 0.8333 | 0.8889 | 0.8889 |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **19** | S | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 49 |
| **20** | T | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 16 |
| **21** | U | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 11 | 121 |
| **22** | V | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 25 |
| **23** | W | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 4 |
| **24** | X | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 6 | 36 |
| **25** | Y | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 6 | 36 |
| **26** | Z | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 8 | 64 |
| **27** | A1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10 | 100 |
| **28** | B1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 6 | 36 |
| **29** | C1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 16 |
| **30** | D1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 25 |
| **31** | E1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 7 | 49 |
| **32** | F1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 16 |
| **33** | G1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 10 | 100 |
| **34** | H1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10 | 100 |
| **35** | I1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 11 | 121 |
|  | JA | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |  |  |
|  | BA | 8 | 7 | 7 | 7 | 3 | 5 | 8 | 7 | 6 | 6 | 5 | 7 | 6 | 2 | 5 | 9 | 4 | 5 | 4 | 5 |  |  |
|  | PA | 0.5 | 0.4375 | 0.4375 | 0.4375 | 0.1875 | 0.3125 | 0.5 | 0.4375 | 0.375 | 0.375 | 0.3125 | 0.4375 | 0.375 | 0.125 | 0.3125 | 0.5625 | 0.25 | 0.3125 | 0.25 | 0.3125 |  |  |
|  | D | 0,44 | 0,44 | 0,31 | 0,44 | 0,63 | 0.4653 | 0.2778 | 0,45 | 0,43 | 0,45 | 0.2431 | 0,45 | 0,40 | 0,78 | 0,50 | 0.2708 | 0,55 | 0,62 | 0,64 | 0,62 |  |  |
|  |  | B | B | C | B | BS | B | C | B | B | B | C | B | B | BS | B | C | B | BS | BS | BS |  |  |

**LAMPIRAN M**

**PERHITUNGAN UJI DAYA PEMBEDA**

Untuk dapat membedakan suatu soal baik atau buruk dapat digunakan rumus indeks deskriminasi atau daya pembeda. Adapun contoh perhitungan item nomor 14 sebagai berikut :

1. Berdasarkan analisis butir soal maka JA = 18 dan JB = 17
2. BA = 15 ; BB = 7
3. D =

=

=

Berdasarkan kiteria daya pembeda maka dapat disimpulkan item nomor 14 merupakan soal yang baik.