

UNIVERSITI SAINS MALAYSIA

Peperiksaan Semester Kedua  
Sidang Akademik 2004/2005

Mac 2005

**HGT 219 – Kaedah Kuantitatif dan Analisis Ruangan**

Masa : 3 jam

Sila pastikan bahawa kertas peperiksaan ini mengandungi DUA BELAS muka surat yang bercetak sebelum anda memulakan peperiksaan ini.

Jawab EMPAT soalan. Jawab DUA soalan dari setiap **Bahagian A** dan **Bahagian B**.

**Bahagian A**

1. Satu kajian pertambahan berat badan pesakit pada tahap umur 20 tahun dan 35 tahun dijalankan dengan melihat rekod kesihatan seramai 10 orang pesakit (Jadual 1). Menggunakan kaedah statistik inferens Ujian  $t$  (paired comparison), kira dan huraikan dapatan anda.

Jadual 1. Taburan berat badan pesakit (kg) pada tahap umur 20 dan 35 tahun

| No. (n) | Umur 20 tahun (kg) | Umur 35 tahun (kg) |
|---------|--------------------|--------------------|
| 1       | 65                 | 73                 |
| 2       | 64                 | 70                 |
| 3       | 74                 | 78                 |
| 4       | 78                 | 83                 |
| 5       | 63                 | 70                 |
| 6       | 63                 | 73                 |
| 7       | 64                 | 67                 |
| 8       | 63                 | 68                 |
| 9       | 74                 | 78                 |
| 10      | 79                 | 83                 |

2. Jadual 2 ialah data kajian tentang kelajuan ( $X_i$ ) kereta Proton Gen-2 dalam km/jam dan jumlah penggunaan petrol dalam liter ( $Y_i$ ) untuk jarak perjalanan sejauh 200 km.

Jadual 2. Kadar kelajuan kereta Proton Gen-2 berbanding dengan jumlah penggunaan petrol bagi jarak perjalanan 200 km.

| $X_i$ | $Y_i$ | $X_i - \bar{X}$ | $Y_i - \bar{Y}$ | $(X_i - \bar{X})^2$ | $(X_i - \bar{X})(Y_i - \bar{Y})$ | $(Y_i - \bar{Y})^2$ |
|-------|-------|-----------------|-----------------|---------------------|----------------------------------|---------------------|
| 48    | 18.00 |                 |                 |                     |                                  |                     |
| 64    | 20.00 |                 |                 |                     |                                  |                     |
| 80    | 16.30 |                 |                 |                     |                                  |                     |
| 96    | 15.70 |                 |                 |                     |                                  |                     |
| 112   | 13.60 |                 |                 |                     |                                  |                     |

- [a] Kira dan lengkapkan Jadual 2 di atas. [8 markah]
- [b] Plotkan poin-poin X dan Y di atas kertas graf. [3 markah]
- [c] Kira persamaan regresi  $Y = a + bX$ , dan plotkan. [8 markah]
- [d] Berdasarkan halaju 110 km/jam rumuskan dapatan anda.

[6 markah]

3. Jadual 3 menunjukkan penentuan kepekatan (ppm) satu bahan larutan yang hadir dalam dua tahap kedalaman tanah.

- [a] Kirakan korelasi Pearson. [20 markah]
- [b] Nyatakan tahap kesignifikanan pada aras keyakinan  $\alpha = 0.05$ .

[5 markah]

Jadual 3. Bahan larutan (ppm) yang terdapat dalam dua tahap kedalaman tanah.

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|  | <u>20 cm</u> | <u>40 cm</u> |
|--|--------------|--------------|
|  | 24           | 20           |
|  | 84           | 103          |
|  | 13           | 16           |
|  | 13           | 20           |
|  | 48           | 86           |
|  | 61           | 36           |
|  | 112          | 53           |
|  | 66           | 84           |

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4. Jadual 4 menunjukkan hasil satu kajian untuk 2 jenis bahan kimia bagi menghasilkan satu jenis tanaman renek. Ukuran ruas batang (cm) untuk ujian rawak 5 replikasi telah dilakukan termasuk sampel kawalan.

| Pasu | kawalan | Kimia |     |
|------|---------|-------|-----|
|      |         | A     | B   |
| 1    | 9.0     | 8.5   | 4.0 |
| 2    | 9.6     | 7.4   | 5.8 |
| 3    | 10.5    | 7.5   | 5.1 |
| 4    | 9.9     | 8.5   | 5.8 |
| 5    | 8.0     | 9.5   | 5.7 |

...4/-

- [a] Lengkapkan jadual ANOVA 1-Arah (1-way ANOVA).  
[10 markah]
- [b] Nyatakan hipotesis ujian ini dan kirakan F-ratio.  
[10 markah]
- [c] Pada aras keyakinan  $\alpha = 0.05$ , tentukan samada anda mempunyai bukti yang cukup untuk menolak  $H_0$ .  
[5 markah]

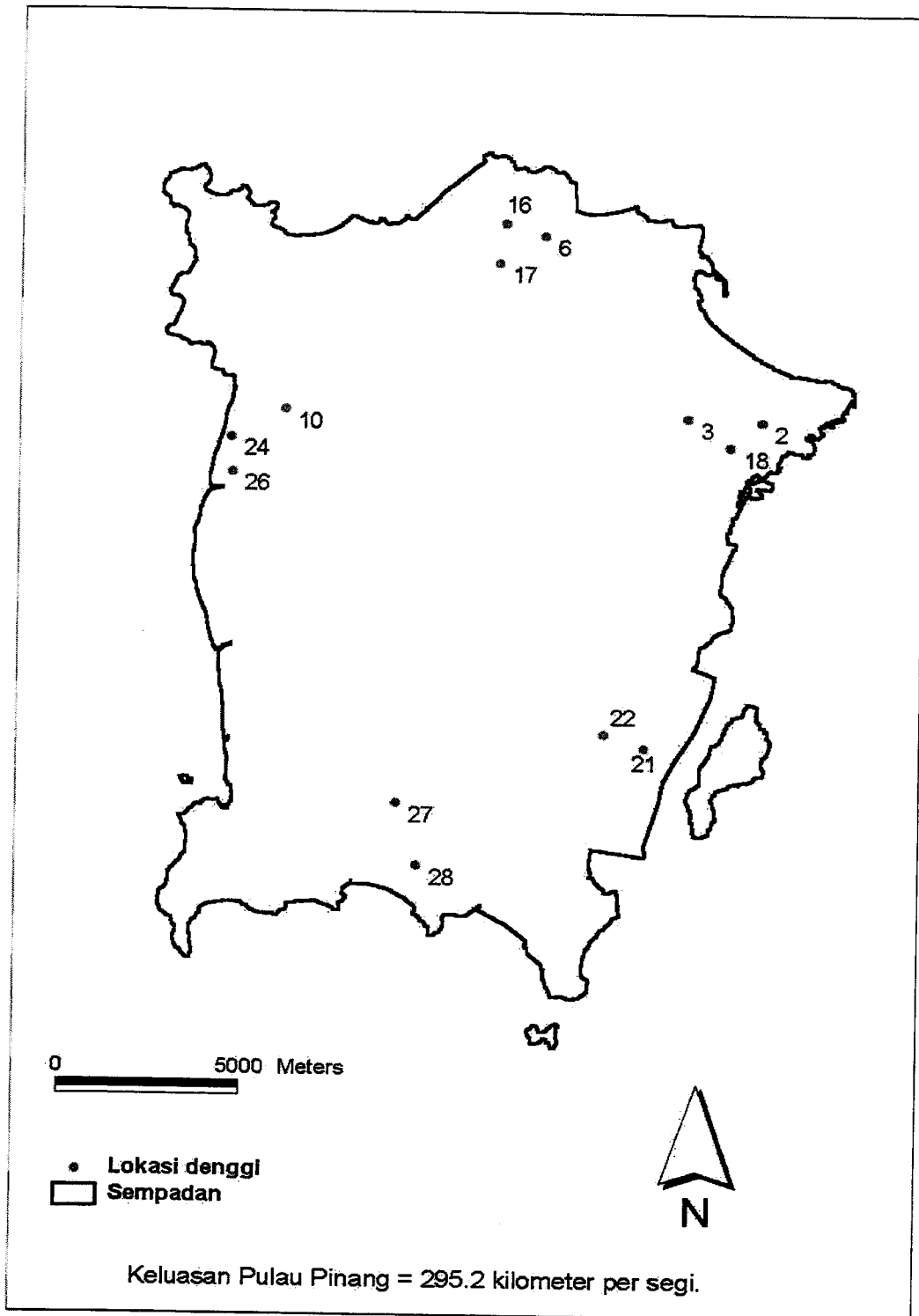
**Bahagian B**

5. Rajah 1 dan Jadual 5 menunjukkan taburan dan kordinat lokasi hipotetikal demam denggi di Pulau Pinang. Berdasarkan hanya kepada maklumat yang diberikan dalam rajah dan jadual tersebut, jawab soalan berikut:
- [a] Menggunakan kaedah yang sesuai, ukurkan dan uji kesignifikanan statistik corak ruangan taburan demam denggi tersebut.  
[15 markah]
  - [b] Huraikan dapatan anda.  
[5 markah]
  - [c] Huraikan batasan-batasan kaedah yang digunakan.  
[5 markah]

Jadual 5: Kordinat lokasi demam denggi hipotetikal di Pulau Pinang.

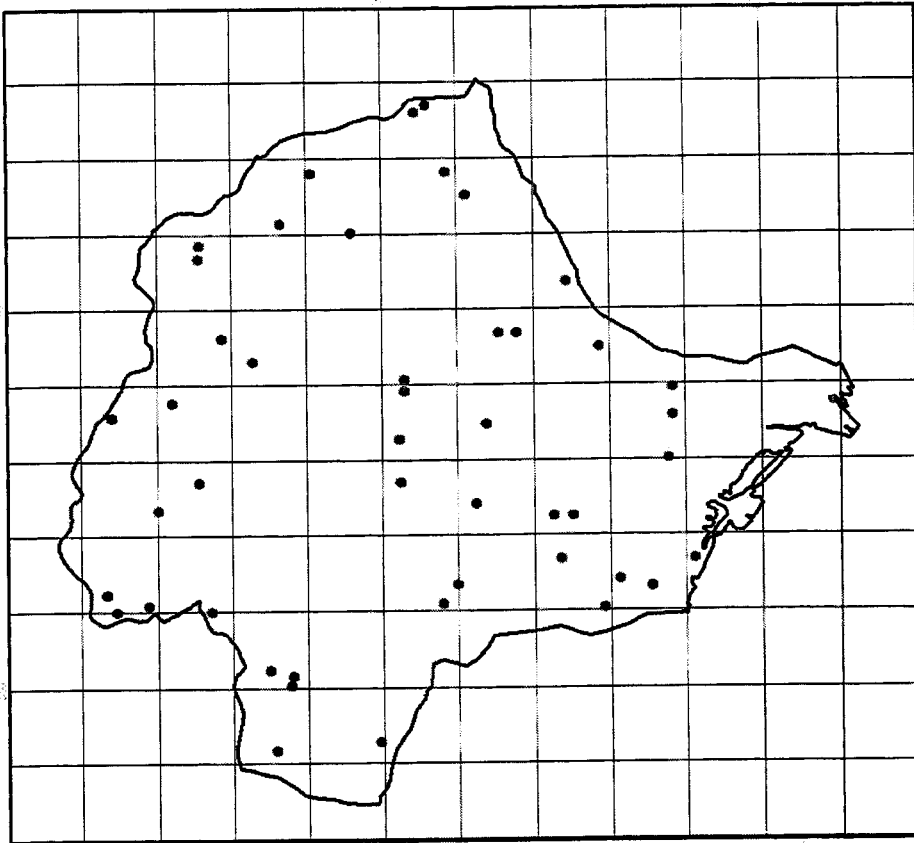
| ID | X     | Y     | Jiran terdekat | Jarak ke jiran terdekat (km) |
|----|-------|-------|----------------|------------------------------|
| 2  | 259.9 | 599.2 | 18             | 1.1                          |
| 3  | 257.9 | 599.3 | 18             | 1.4                          |
| 6  | 254.0 | 604.6 | 16             | 1.1                          |
| 10 | 246.9 | 599.5 | 24             | 1.7                          |
| 16 | 252.9 | 605.0 | 17             | 1.2                          |
| 17 | 252.7 | 603.8 | 16             | 1.2                          |
| 18 | 259.0 | 598.4 | 2              | 1.1                          |
| 21 | 256.8 | 589.6 | 22             | 1.2                          |
| 22 | 255.7 | 590.0 | 21             | 1.2                          |
| 24 | 245.5 | 598.6 | 26             | 1.0                          |
| 26 | 245.5 | 597.6 | 24             | 1.0                          |
| 27 | 250.0 | 587.9 | 28             | 1.9                          |
| 28 | 250.6 | 586.1 | 27             | 1.9                          |

6. Rajah 2 menunjukkan taburan lokasi petempatan di Lembangan Sungai Pinang. Berdasarkan hanya kepada maklumat yang diberikan dalam Rajah 2, jawab soalan-soalan berikut:
- [a] Menggunakan kaedah yang sesuai, ukurkan dan uji kesignifikanan statistik corak ruangan taburan petempatan tersebut. [15 markah]
  - [b] Huraikan dapatan anda. [5 markah]
  - [c] Huraikan batasan-batasan kaedah yang digunakan. [5 markah]
7. [a] Huraikan maksud dan tujuan analisis ruangan dalam kajian geografi [10 markah]
- [b] Menggunakan contoh-contoh yang sesuai, huraikan faktor-faktor yang mempengaruhi jenis-jenis analisis ruangan yang digunakan dalam sesuatu kajian geografi. [15 markah]
8. Berdasarkan kepada contoh-contoh yang sesuai, bincangkan sejauhmana peta berperanan dalam analisis ruangan. [25 markah]



Rajah 1. Taburan Lokasi Demam Denggi Hipotetikal di Pulau Pinang

...Rajah 2/-  
...7/-



Rajah 2. Taburan lokasi petempatan di Lembangan Sungai Pinang.

**Formula Statistik:**

$$Z = \frac{\bar{X} - \mu}{\sigma / \sqrt{n}}$$

$$t = \frac{\bar{X} - \mu}{s / \sqrt{n}}$$

$$r = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}$$

$$t = r \sqrt{\frac{n-2}{1-r^2}}$$

$$a = \bar{Y} - b \bar{X}$$

$$b = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sum (X_i - \bar{X})^2}$$

$$t = \frac{d^2}{s / n}$$

$$s_x^2 = \frac{\sum (x_i - \bar{x})^2}{n-1}$$

$$s_x = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$



**Formula Statistik:**

$$SS_{\text{treatment}} = n_1(\bar{x}_1 - \bar{\bar{x}})^2 + n_2(\bar{x}_2 - \bar{\bar{x}})^2 + \dots + n_k(\bar{x}_k - \bar{\bar{x}})^2$$

$$S_{\text{between}}^2 = \frac{SS_{\text{treatment}}}{k - 1}$$

$$SS_{\text{error}} = (n_1 - 1)s_1^2 + (n_2 - 1)s_2^2 + \dots + (n_k - 1)s_k^2$$

$$S_{\text{within}}^2 = \frac{SS_{\text{error}}}{n - k}$$

$$F_{\text{calc}} = \frac{S_{\text{between}}^2}{S_{\text{within}}^2}$$

...Nilai Kritisal Taburan F/-  
...10/-

**Nilai Kritikal Taburan F**

**Critical Values of the F Distribution**

**at alpha  
= .05**

|          |        | Degrees of Freedom, Numerator (Factor) |        |        |        |        |        |        |  |
|----------|--------|--|--------|--------|--------|--------|--------|--------|--|
|          | 1      | 2                                      | 3      | 4      | 5      | 6      | 7      | 8      |  |
| 1        | 161.45 | 199.50                                 | 215.71 | 224.58 | 230.16 | 233.99 | 236.77 | 238.88 |  |
| 2        | 18.51  | 19.00                                  | 19.16  | 19.25  | 19.30  | 19.33  | 19.35  | 19.37  |  |
| 3        | 10.13  | 9.55                                   | 9.28   | 9.12   | 9.01   | 8.94   | 8.89   | 8.85   |  |
| 4        | 7.71   | 6.94                                   | 6.59   | 6.39   | 6.26   | 6.16   | 6.09   | 6.04   |  |
| 5        | 6.61   | 5.79                                   | 5.41   | 5.19   | 5.05   | 4.95   | 4.88   | 4.82   |  |
| 6        | 5.99   | 5.14                                   | 4.76   | 4.53   | 4.39   | 4.28   | 4.21   | 4.15   |  |
| 7        | 5.59   | 4.74                                   | 4.35   | 4.12   | 3.97   | 3.87   | 3.79   | 3.73   |  |
| 8        | 5.32   | 4.46                                   | 4.07   | 3.84   | 3.69   | 3.58   | 3.50   | 3.44   |  |
| 9        | 5.12   | 4.26                                   | 3.86   | 3.63   | 3.48   | 3.37   | 3.29   | 3.23   |  |
| 10       | 4.96   | 4.10                                   | 3.71   | 3.48   | 3.33   | 3.22   | 3.14   | 3.07   |  |
| 12       | 4.75   | 3.89                                   | 3.49   | 3.26   | 3.11   | 3.00   | 2.91   | 2.85   |  |
| 14       | 4.60   | 3.74                                   | 3.34   | 3.11   | 2.96   | 2.85   | 2.76   | 2.70   |  |
| 16       | 4.49   | 3.63                                   | 3.24   | 3.01   | 2.85   | 2.74   | 2.66   | 2.59   |  |
| 18       | 4.41   | 3.55                                   | 3.16   | 2.93   | 2.77   | 2.66   | 2.58   | 2.51   |  |
| 20       | 4.35   | 3.49                                   | 3.10   | 2.87   | 2.71   | 2.60   | 2.51   | 2.45   |  |
| 25       | 4.24   | 3.39                                   | 2.99   | 2.76   | 2.60   | 2.49   | 2.40   | 2.34   |  |
| 30       | 4.17   | 3.32                                   | 2.92   | 2.69   | 2.53   | 2.42   | 2.33   | 2.27   |  |
| 35       | 4.12   | 3.27                                   | 2.87   | 2.64   | 2.49   | 2.37   | 2.29   | 2.22   |  |
| 40       | 4.08   | 3.23                                   | 2.84   | 2.61   | 2.45   | 2.34   | 2.25   | 2.18   |  |
| 45       | 4.06   | 3.20                                   | 2.81   | 2.58   | 2.42   | 2.31   | 2.22   | 2.15   |  |
| 50       | 4.03   | 3.18                                   | 2.79   | 2.56   | 2.40   | 2.29   | 2.20   | 2.13   |  |
| 60       | 4.00   | 3.15                                   | 2.76   | 2.53   | 2.37   | 2.25   | 2.17   | 2.10   |  |
| 70       | 3.98   | 3.13                                   | 2.74   | 2.50   | 2.35   | 2.23   | 2.14   | 2.07   |  |
| 80       | 3.96   | 3.11                                   | 2.72   | 2.49   | 2.33   | 2.21   | 2.13   | 2.06   |  |
| 90       | 3.95   | 3.10                                   | 2.71   | 2.47   | 2.32   | 2.20   | 2.11   | 2.04   |  |
| 100      | 3.94   | 3.09                                   | 2.70   | 2.46   | 2.31   | 2.19   | 2.10   | 2.03   |  |
| 150      | 3.90   | 3.06                                   | 2.66   | 2.43   | 2.27   | 2.16   | 2.07   | 2.00   |  |
| 200      | 3.89   | 3.04                                   | 2.65   | 2.42   | 2.26   | 2.14   | 2.06   | 1.98   |  |
| 300      | 3.87   | 3.03                                   | 2.63   | 2.40   | 2.24   | 2.13   | 2.04   | 1.97   |  |
| 500      | 3.86   | 3.01                                   | 2.62   | 2.39   | 2.23   | 2.12   | 2.03   | 1.96   |  |
| 1000     | 3.85   | 3.00                                   | 2.61   | 2.38   | 2.22   | 2.11   | 2.02   | 1.95   |  |
| Infinite | 3.84   | 3.00                                   | 2.60   | 2.37   | 2.21   | 2.10   | 2.01   | 1.94   |  |

...Nilai Kritikal Taburan T/-  
...11/-

**Nilai Kritis Taburan T**

**Student's t-Distribution critical values**

| df   | 0.5   | 0.40  | 0.30  | 0.20  | 0.10  | 0.05  | 0.04  | 0.02  | 0.01  | 0.005 | 0.002 | 0.001 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1    | 1.000 | 1.376 | 1.963 | 3.078 | 6.314 | 12.71 | 15.89 | 31.82 | 63.66 | 127.3 | 318.3 | 636.6 |
| 2    | .816  | 1.061 | 1.386 | 1.886 | 2.920 | 4.303 | 4.849 | 6.965 | 9.925 | 14.09 | 22.33 | 31.60 |
| 3    | .765  | .978  | 1.250 | 1.638 | 2.353 | 3.182 | 3.482 | 4.541 | 5.841 | 7.453 | 10.21 | 12.92 |
| 4    | .741  | .941  | 1.190 | 1.533 | 2.132 | 2.776 | 2.999 | 3.747 | 4.604 | 5.598 | 7.173 | 8.610 |
| 5    | .727  | .920  | 1.156 | 1.476 | 2.015 | 2.571 | 2.757 | 3.365 | 4.032 | 4.773 | 5.893 | 6.869 |
| 6    | .718  | .906  | 1.134 | 1.440 | 1.943 | 2.447 | 2.612 | 3.143 | 3.707 | 4.317 | 5.208 | 5.959 |
| 7    | .711  | .896  | 1.119 | 1.415 | 1.895 | 2.365 | 2.517 | 2.998 | 3.499 | 4.029 | 4.785 | 5.408 |
| 8    | .706  | .889  | 1.108 | 1.397 | 1.860 | 2.306 | 2.449 | 2.896 | 3.355 | 3.833 | 4.501 | 5.041 |
| 9    | .703  | .883  | 1.100 | 1.383 | 1.833 | 2.262 | 2.398 | 2.821 | 3.250 | 3.690 | 4.297 | 4.781 |
| 10   | .700  | .879  | 1.093 | 1.372 | 1.812 | 2.228 | 2.359 | 2.764 | 3.169 | 3.581 | 4.144 | 4.587 |
| 11   | .697  | .876  | 1.088 | 1.363 | 1.796 | 2.201 | 2.328 | 2.718 | 3.106 | 3.497 | 4.025 | 4.437 |
| 12   | .695  | .873  | 1.083 | 1.356 | 1.782 | 2.179 | 2.303 | 2.681 | 3.055 | 3.428 | 3.930 | 4.318 |
| 13   | .694  | .870  | 1.079 | 1.350 | 1.771 | 2.160 | 2.282 | 2.650 | 3.012 | 3.372 | 3.852 | 4.221 |
| 14   | .692  | .868  | 1.076 | 1.345 | 1.761 | 2.145 | 2.264 | 2.624 | 2.977 | 3.326 | 3.787 | 4.140 |
| 15   | .691  | .866  | 1.074 | 1.341 | 1.753 | 2.131 | 2.249 | 2.602 | 2.947 | 3.286 | 3.733 | 4.073 |
| 16   | .690  | .865  | 1.071 | 1.337 | 1.746 | 2.120 | 2.235 | 2.583 | 2.921 | 3.252 | 3.686 | 4.015 |
| 17   | .689  | .863  | 1.069 | 1.333 | 1.740 | 2.110 | 2.224 | 2.567 | 2.898 | 3.222 | 3.646 | 3.965 |
| 18   | .688  | .862  | 1.067 | 1.330 | 1.734 | 2.101 | 2.214 | 2.552 | 2.878 | 3.197 | 3.611 | 3.922 |
| 19   | .688  | .861  | 1.066 | 1.328 | 1.729 | 2.093 | 2.205 | 2.539 | 2.861 | 3.174 | 3.579 | 3.883 |
| 20   | .687  | .860  | 1.064 | 1.325 | 1.725 | 2.086 | 2.197 | 2.528 | 2.845 | 3.153 | 3.552 | 3.850 |
| 21   | .686  | .859  | 1.063 | 1.323 | 1.721 | 2.080 | 2.189 | 2.518 | 2.831 | 3.135 | 3.527 | 3.819 |
| 22   | .686  | .858  | 1.061 | 1.321 | 1.717 | 2.074 | 2.183 | 2.508 | 2.819 | 3.119 | 3.505 | 3.792 |
| 23   | .685  | .858  | 1.060 | 1.319 | 1.714 | 2.069 | 2.177 | 2.500 | 2.807 | 3.104 | 3.485 | 3.768 |
| 24   | .685  | .857  | 1.059 | 1.318 | 1.711 | 2.064 | 2.172 | 2.492 | 2.797 | 3.091 | 3.467 | 3.745 |
| 25   | .684  | .856  | 1.058 | 1.316 | 1.708 | 2.060 | 2.167 | 2.485 | 2.787 | 3.078 | 3.450 | 3.725 |
| 26   | .684  | .856  | 1.058 | 1.315 | 1.706 | 2.056 | 2.162 | 2.479 | 2.779 | 3.067 | 3.435 | 3.707 |
| 27   | .684  | .855  | 1.057 | 1.314 | 1.703 | 2.052 | 2.15  | 2.473 | 2.771 | 3.057 | 3.421 | 3.690 |
| 28   | .683  | .855  | 1.056 | 1.313 | 1.701 | 2.048 | 2.154 | 2.467 | 2.763 | 3.047 | 3.408 | 3.674 |
| 29   | .683  | .854  | 1.055 | 1.311 | 1.699 | 2.045 | 2.150 | 2.462 | 2.756 | 3.038 | 3.396 | 3.659 |
| 30   | .683  | .854  | 1.055 | 1.310 | 1.697 | 2.042 | 2.147 | 2.457 | 2.750 | 3.030 | 3.385 | 3.646 |
| 40   | .681  | .851  | 1.050 | 1.303 | 1.684 | 2.021 | 2.123 | 2.423 | 2.704 | 2.971 | 3.307 | 3.551 |
| 50   | .679  | .849  | 1.047 | 1.295 | 1.676 | 2.009 | 2.109 | 2.403 | 2.678 | 2.937 | 3.261 | 3.496 |
| 60   | .679  | .848  | 1.045 | 1.296 | 1.671 | 2.000 | 2.099 | 2.390 | 2.660 | 2.915 | 3.232 | 3.460 |
| 80   | .678  | .846  | 1.043 | 1.292 | 1.664 | 1.990 | 2.088 | 2.374 | 2.639 | 2.887 | 3.195 | 3.416 |
| 100  | .677  | .845  | 1.042 | 1.290 | 1.660 | 1.984 | 2.081 | 2.364 | 2.626 | 2.871 | 3.174 | 3.390 |
| 1000 | .675  | .842  | 1.037 | 1.282 | 1.646 | 1.962 | 2.056 | 2.330 | 2.581 | 2.813 | 3.098 | 3.300 |
| inf. | .674  | .841  | 1.036 | 1.282 | 1.645 | 1.960 | 2.054 | 2.326 | 2.576 | 2.807 | 3.091 | 3.291 |

...Nilai Kritis Taburan Ganda Dua Chi/-  
...12/-

Nilai Kritis Ganda Dua Chi

Critical values of the Chi-Squared Distribution

| df  | .25   | .20   | .15   | .10   | .05   | .025  | .02   | .01   | .005  | .0025 | .001  | .0005 |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1   | 1.32  | 1.64  | 2.07  | 2.71  | 3.84  | 5.02  | 5.41  | 6.63  | 7.88  | 9.14  | 10.83 | 12.12 |
| 2   | 2.77  | 3.22  | 3.79  | 4.61  | 5.99  | 7.38  | 7.82  | 9.21  | 10.60 | 11.98 | 13.82 | 15.20 |
| 3   | 4.11  | 4.64  | 5.32  | 6.25  | 7.81  | 9.35  | 9.84  | 11.34 | 12.84 | 14.32 | 16.27 | 17.73 |
| 4   | 5.39  | 5.59  | 6.74  | 7.78  | 9.49  | 11.14 | 11.67 | 13.23 | 14.86 | 16.42 | 18.47 | 20.00 |
| 5   | 6.63  | 7.29  | 8.12  | 9.24  | 11.07 | 12.83 | 13.33 | 15.09 | 16.75 | 18.39 | 20.51 | 22.11 |
| 6   | 7.84  | 8.56  | 9.45  | 10.64 | 12.53 | 14.45 | 15.03 | 16.81 | 18.55 | 20.25 | 22.46 | 24.10 |
| 7   | 9.04  | 9.80  | 10.75 | 12.02 | 14.07 | 16.01 | 16.62 | 18.48 | 20.28 | 22.04 | 24.32 | 26.02 |
| 8   | 10.22 | 11.03 | 12.03 | 13.36 | 15.51 | 17.53 | 18.17 | 20.09 | 21.95 | 23.77 | 26.12 | 27.87 |
| 9   | 11.39 | 12.24 | 13.29 | 14.68 | 16.92 | 19.02 | 19.63 | 21.67 | 23.59 | 25.46 | 27.83 | 29.67 |
| 10  | 12.55 | 13.44 | 14.53 | 15.99 | 18.31 | 20.48 | 21.16 | 23.21 | 25.19 | 27.11 | 29.59 | 31.42 |
| 11  | 13.70 | 14.63 | 15.77 | 17.29 | 19.68 | 21.92 | 22.62 | 24.72 | 26.76 | 28.73 | 31.26 | 33.14 |
| 12  | 14.85 | 15.81 | 16.99 | 18.55 | 21.03 | 23.34 | 24.05 | 26.22 | 28.30 | 30.32 | 32.91 | 34.82 |
| 13  | 15.93 | 16.58 | 18.00 | 19.81 | 22.36 | 24.74 | 25.47 | 27.69 | 29.82 | 31.88 | 34.53 | 36.48 |
| 14  | 17.12 | 18.15 | 19.4  | 21.06 | 23.68 | 26.12 | 26.87 | 29.14 | 31.32 | 33.43 | 36.12 | 38.11 |
| 15  | 18.25 | 19.31 | 20.60 | 22.31 | 25.00 | 27.49 | 28.26 | 30.58 | 32.80 | 34.95 | 37.70 | 39.72 |
| 16  | 19.37 | 20.47 | 21.79 | 23.54 | 26.30 | 28.85 | 29.63 | 32.00 | 34.27 | 36.46 | 39.25 | 41.31 |
| 17  | 20.49 | 21.61 | 22.98 | 24.77 | 27.59 | 30.19 | 31.00 | 33.41 | 35.72 | 37.95 | 40.79 | 42.88 |
| 18  | 21.60 | 22.76 | 24.16 | 25.99 | 28.87 | 31.53 | 32.35 | 34.81 | 37.16 | 39.42 | 42.31 | 44.43 |
| 19  | 22.72 | 23.90 | 25.33 | 27.20 | 30.14 | 32.85 | 33.69 | 36.19 | 38.58 | 40.88 | 43.82 | 45.97 |
| 20  | 23.83 | 25.04 | 26.50 | 28.41 | 31.41 | 34.17 | 35.02 | 37.57 | 40.00 | 42.34 | 45.31 | 47.50 |
| 21  | 24.93 | 26.17 | 27.66 | 29.62 | 32.67 | 35.48 | 36.34 | 38.93 | 41.40 | 43.78 | 46.80 | 49.01 |
| 22  | 26.04 | 27.30 | 28.82 | 30.81 | 33.92 | 36.78 | 37.66 | 40.29 | 42.80 | 45.20 | 48.27 | 50.51 |
| 23  | 27.14 | 28.43 | 29.98 | 32.01 | 35.17 | 38.08 | 38.97 | 41.64 | 44.18 | 46.62 | 49.73 | 52.00 |
| 24  | 28.24 | 29.55 | 31.13 | 33.20 | 36.42 | 39.36 | 40.27 | 42.98 | 45.56 | 48.03 | 51.18 | 53.48 |
| 25  | 29.34 | 30.68 | 32.28 | 34.38 | 37.65 | 40.65 | 41.57 | 44.31 | 46.93 | 49.44 | 52.62 | 54.95 |
| 26  | 30.43 | 31.79 | 33.43 | 35.56 | 38.89 | 41.92 | 42.86 | 45.64 | 48.29 | 50.83 | 54.05 | 56.41 |
| 27  | 31.53 | 32.91 | 34.57 | 36.74 | 40.11 | 43.19 | 44.14 | 46.96 | 49.64 | 52.22 | 55.48 | 57.86 |
| 28  | 32.62 | 34.03 | 35.71 | 37.92 | 41.34 | 44.46 | 45.42 | 48.28 | 50.99 | 53.59 | 56.89 | 59.30 |
| 29  | 33.71 | 35.14 | 36.85 | 39.09 | 42.56 | 45.72 | 46.69 | 49.59 | 52.34 | 54.97 | 58.30 | 60.73 |
| 30  | 34.80 | 36.25 | 37.99 | 40.26 | 43.77 | 46.98 | 47.96 | 50.89 | 53.67 | 56.33 | 59.70 | 62.16 |
| 40  | 45.62 | 47.27 | 49.24 | 51.81 | 55.76 | 59.34 | 60.44 | 63.69 | 66.77 | 69.70 | 73.40 | 76.09 |
| 50  | 56.33 | 53.16 | 60.35 | 63.17 | 67.50 | 71.42 | 72.61 | 76.15 | 79.49 | 82.66 | 86.66 | 89.56 |
| 60  | 66.98 | 68.97 | 71.34 | 74.40 | 79.08 | 83.30 | 84.58 | 88.38 | 91.95 | 95.34 | 99.61 | 102.7 |
| 80  | 88.13 | 90.41 | 93.11 | 96.58 | 101.9 | 106.6 | 108.1 | 112.3 | 116.3 | 120.1 | 124.8 | 128.3 |
| 100 | 109.1 | 111.7 | 114.7 | 118.5 | 124.3 | 129.6 | 131.1 | 135.8 | 140.2 | 144.3 | 149.4 | 153.2 |