SULIT

POLITEKNIK MALAYSIA

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN TINGGI

JABATAN KEJURUTERAAN ELEKTRIK

PEPERIKSAAN AKHIR

SESI DISEMBER 2015

DBM1063 : MATHEMATICS

TARIKH : 09 APRIL 2016
MASA : 8.30 AM – 10.30 AM (2 JAM)

Kertas ini mengandungi **ENAM (6)** halaman bercetak.
Bahagian A : Struktur (1 soalan)
Bahagian B : Struktur (4 soalan)
Dokumen sokongan yang disertakan : Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SECTION A : 25 MARKS
BAHAGIAN A : 25 MARKAH

INSTRUCTION:
This section consists of **ONE (1) compulsory** structure questions.

ARAHAN :
*Bahagian ini mengandungi **SATU (1)** soalan berstruktur yang WAJIB dijawab.*

QUESTION 1 [25 marks]

***SOALAN 1* [*25 markah*]**

CLO1
C2

a) Simplify the following expression

Permudahkan ungkapan berikut

i. $\frac{2p}{5rs} - \frac{s}{p}$ [2 marks] [*2 markah*]

ii. $\frac{5}{8z} \div \frac{24}{z^2}$ [2 marks] [*2 markah*]

iii. $3 \times \frac{(3y-2)}{2x-9y}$ [2 marks] [*2 markah*]

CLO1
C2

b) Express the following formulae with subjects as indicated in bracket

Ungkapkan formula berikut dengan subjek di dalam kurungan

i. $M+3=\frac{6E}{L}-5, \quad [E]$ [2 marks] [*2 markah*]

ii. $\frac{5}{9}=DEF+5F, \quad [E]$ [2 marks] [*2 markah*]

iii. $x^2-3=\sqrt{y^2+m^2}, \quad [m]$ [3 marks] [*3 markah*]

iv. $3d-\frac{3}{2}=\frac{3}{5}b+26, \quad [b]$ [2 marks] [*2 markah*]

CLO1
C3

c) Solve the quadratic equation by formulae method

Selesaikan persamaan kuadratik dengan kaedah formula

$4x^2-20x+7=0$ [10 marks] [*10 markah*]

SECTION B : 75 MARKS
BAHAGIAN B : 75 MARKAH

INSTRUCTION:
This section consists of **FOUR (4)** structured questions. Answer **THREE (3)** question only.

ARAHAN:
*Bahagian ini mengandungi **EMPAT(4)** soalan berstruktur. Jawab **TIGA(3)** soalan sahaja.*

QUESTION 1 [25 marks]

***SOALAN 1* [25 markah]**

CLO1 C2

a) Find the value for each of the following

Dapatkan nilai bagi setiap yang berikut

i. $4^{\frac{2}{3}} \times 16^{\frac{4}{3}}$ [3 marks] [*3 markah*]

ii. $\left(9^{\frac{1}{4}} \times 9^{\frac{1}{3}}\right)^6$ [3 marks] [*3 markah*]

iii. $\log_4 8 - 5\log_4 2$ [5 marks] [*5 markah*]

CLO1 C2

b) Given that $\log_5 2 = p$ and $\log_5 3 = q$, express each of the following in terms of p and/ or q.

Diberi $\log_5 2 = p$ *dan* $\log_5 3 = q$, *ungkapkan setiap yang berikut dalam sebutan* p dan/ atau q.

i. $\log_5 16$ [3 marks] [*3 markah*]

ii. $\log_5 1.5$ [3 marks] [*3 markah*]

CLO1 C3

iii. $\log_5 72$ [4 marks] [*4 markah*]

c) Solve the equation

Selesaikan persamaan berikut

$$\log_5(2x-6) = \frac{1}{2}\log_5 4$$ [4 marks] [*4 markah*]

QUESTION 2 [25 marks]

***SOALAN 2* [25 markah]**

CLO2 C3

a) Calculate the midpoint and the gradient for each of the following two points

Kirakan titik tengah dan kecerunan bagi setiap dua titik koordinat yang diberikan

i. $A(-5,6)$ and $B(4,2)$ [4 marks] [*4 markah*]

ii. $M(-3,9)$ and $N(6,8)$ [4 marks] [*4 markah*]

iii. $P(-5,12)$ and $Q(-9.4)$ [4 marks] [*4 markah*]

CLO2 C3

b) Plot the graph of $x^2 + 2x - 5$ for $-4 \le x \le 2$

Plotkan graf bagi $x^2 + 2x - 5$ untuk $-4 \le x \le 2$ [13 marks] [*13 markah*]

QUESTION 3 [25 marks]

***SOALAN 3* [25 markah]**

CLO3 C3

a) Table 4.1 shows the sizes of the T shirt sold in a retail outlet in a week.

Jadual 4.1 menunjukkan saiz baju T yang dijual disebuah kedai baju dalam masa satu minggu.

Size of Tshirt	XS	S	M	L	XL
Number of Tshirt sold	45	30	26	34	15

Table 4.1

Jadual 4.1

i. Calculate the percentage of every size of Tshirt sold [5 marks]
Kirakan peratusan setiap saiz baju T yang dijual [*5 markah*]

ii. Draw Pie Chart to represent the data [4 marks]
Lukiskan carta Pie bagi data tersebut [*4 markah*]

CLO3 C3

b) Table 4.2 shows the distribution of marks mathematic test for 45 students in a

class.

Jadual 4.2 menunjukkan taburan markah ujian matematik 40 orang pelajar dalam sebuah kelas

Marks	Number of students
31 – 40	2
41 – 50	8
51 – 60	9
61 – 70	10
71 – 80	7
81 – 90	6
91 – 100	3

Table 4.2

Jadual 4.2

i. Calculate the mean of the distribution data [7 marks]
Kirakan purata taburan data tersebut [*7 markah*]

ii. Draw an ogive less than hence find the median from the ogive [9 marks]
Lukiskan ogif kurang daripada dan seterusnya tentukan titik tengah bagi taburan data tersebut [*9 markah*]

QUESTION 4 [25 marks]

***SOALAN 4* [*25 markah*]**

CLO3 C3

a) Given a set of data 355, 370, 365, 340, 360, 365, 307, 340, 372. Calculate
Diberi satu set data 355, 370, 365, 340, 360, 365, 307, 340, 372. Kirakan

i. Min [2 marks]
[*2 markah*]

ii. Mod [1 mark]
[*1 markah*]

iii. Median [2 marks]
[*2 markah*]

CLO3 C3

b) Table 5.2 shows the distribution of the data
Jadual 5.2 menunjukkan taburan suatu data

Class	Frequency
0 – 4	20
5 – 9	40
10 – 14	35
15 – 19	15
20 – 24	10
25 – 29	10

Table 5.2

Jadual 5.2

i. Calculate mean, variance and standard deviation of the distribution data in the table [20 marks]
Kirakan purata, varians dan sisihan piawai bagi data di dalam jadual tersebut [*20 markah*]

SOALAN TAMAT

FORMULA DBM1063

BASIC ALGEBRA

Quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

INDICES AND LOGARITHM

Indices

1. $a^m \times a^n = a^{m+n}$
2. $a^m \div a^n = a^{m-n}$
3. $a^{-n} = \frac{1}{a^n}; a \neq 0$
4. $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}; b \neq 0$
5. $\frac{a^{-m}}{b^{-n}} = \frac{b^n}{a^m}; a \neq 0 \text{ and } b \neq 0$
6. $a^0 = 1 \quad ; a \neq 0$
7. $a^{\frac{m}{n}} = \sqrt[n]{a^m}$

Logarithm

1. $\log_a MN = \log_a M + \log_a N$
2. $\log_a \frac{M}{N} = \log_a M - \log_a N$
3. $\log_a (M)^C = C \log_a M$
4. $\log_a a = 1$
5. $\log_N M = \frac{\log_a M}{\log_a N}$

$$x = \log_a y \iff y = a^x$$

COORDINATE GEOMETRY AND GRAPH

Gradient = $m = \frac{y_2 - y_1}{x_2 - x_1}$

Mid point = $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Distance between 2 point $A(x_1, y_1)$, $B(x_2, y_2)$:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Equation of straight line:

i. $y = mx + c$

ii. $y - y_1 = m(x - x_1)$

STATISTICS

Number of class, $k = 1 + 3.3 \log_{10} n$

Mean = $\bar{x} = \frac{\sum fx}{\sum f}$

Mod = $L + \left(\frac{d_1}{d_1 + d_2}\right) C$

Median = $L + \left(\frac{\frac{N}{2} - F}{f_m}\right) C$

Variance = $S^2 = \frac{\sum (x_i - \bar{x})^2 f}{\sum f - 1}$

Standard deviation = $S = \sqrt{\frac{\sum (x_i - \bar{x})^2 f}{\sum f - 1}}$