SULIT

POLITEKNIK MALAYSIA

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN MALAYSIA

PRA DIPLOMA SAINS

PEPERIKSAAN AKHIR

SESI DISEMBER 2018

PBM1024: ADVANCED MATHEMATICS 1

TARIKH : 18 APRIL 2019
MASA : 11.15 PAGI - 1.15 TENGAHARI (2 JAM)

Kertas ini mengandungi **TUJUH (7)** halaman bercetak.
Struktur (4 soalan)
Dokumen sokongan yang disertakan : Kertas Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

INSTRUCTION:

This section consists of **FOUR [4]** structured questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **EMPAT [4]** soalan berstruktur. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO1
C2

(a) Simplify :

Permudahkan :

i. $5^3 \times 5^n$

[1 mark]

[*1 markah*]

ii. $m^3 \div m^2$

[2 marks]

[*2 markah*]

iii. $4^{2\left(\frac{1}{2}\right)} \cdot 4^1$

[2 marks]

[*2 markah*]

iv. $\left(\sqrt[3]{x^6}\right)^2$

[3 marks]

[*3 markah*]

CLO1 C3

(b) Find the value of x for the following equations :

Cari nilai x bagi persamaan berikut :

i. $4^x = 1$

[2 marks]

[*2 markah*]

ii. $5^{x+1} = 9$

[5 marks]

[*5 markah*]

iii. $2^{2-x} = 8^{x-1}$

[4 marks]

[*4 markah*]

CLO1 C3

(c) Given $\log_3 2 = m$ and $\log_3 5 = n$, express $\log_3 20$ in terms of m and n.

Diberi $\log_3 2 = m$ *dan* $\log_3 5 = n$, *nyatakan* $\log_3 20$ *dalam ungkapan m dan n.*

[6 marks]

[*6 markah*]

QUESTION 2

SOALAN 2

CLO1
C2

(a) Complete the frequency distribution table of Taman Cahaya Height residents' age as shown below

Lengkapkan jadual kekerapan umur bagi penduduk di Taman Cahaya Height dibawah

Class Interval	Frequency	Upper Boundaries	Midpoint	Cumulative Frequency
2-11	9			
	12			
22 - 31	4			
	9			
42 - 51	5			
	6			
62 - 71	3			
	2			

Table 2(a): Taman Cahaya Height residents' age

Jadual 2(a): Umur bagi penduduk Taman Cahaya Height

[10 marks]

[*10 markah*]

CLO1
C3

(b) Based on Table 2(a) above, draw a histogram and find the mode.

Berdasarkan Jadual 2(a) diatas, lukis histogram dan cari mod.

[10 marks]

[*10 markah*]

CLO1
C3

(c) Calculate the mean and median for ungrouped data below

Kirakan min dan median bagi data tak terkumpul dibawah.

11, 14, 3, 21, 17, 16, 19, 16, 5, 7, 19, 9, 19, 5

[5 marks]

[*5 markah*]

QUESTION 3

SOALAN 3

CLO2
C2

(a) The following set of data shows the length of 50 arowana fish taken from a pond at Bukit Merah Lake which is measured in nearest centimeters.

Set data berikut menunjukkan panjang bagi 50 ekor ikan kelisa yang diambil dari sebuah kolam ternakan di Tasik Bukit Merah yang diukur dalam centimeter terdekat.

Length [cm] ***Panjang [cm]***	**Frequency [f]** ***Kekerapan [f]***
26 – 30	4
31 – 35	10
36 – 40	12
41 – 45	18
46 – 50	6

Table 3(a)

Jadual 3(a)

Calculate the mean from the table above. [8 marks]

Kirakan min daripada jadual di atas. [*8 markah*]

CLO2
C3

(b) Table 3(b) shows the age of 40 staff in Department of Mathematics, Science and Computer.

Jadual 3(b) menunjukkan umur bagi 40 staf Jabatan Matematik, Sains dan Komputer.

Age [Year] ***Umur [Tahun]***	**Frequency [*f*]** ***Kekerapan [f]***
25 – 29	2
30 – 34	4
35 – 39	7
40 – 44	10
45 – 49	8
50 – 54	6
55 – 59	3

Table 3(b)

Jadual 3(b)

Draw a "less than" ogive to represent the data and find the median.

Lukiskan graf ogive "kurang daripada" untuk mewakili data dan carikan median.

[11 marks]

[11 *markah*]

CLO2
C3

(c) Based on Table 3(b), calculate the mode by using formula.

Berdasarkan Jadual 3(b), kirakan mod dengan menggunakan formula.

[6 marks]

[6 *markah*]

QUESTION 4

SOALAN 4

CLO2 C3 (a) Calculate the mean deviation for Table 4(a) below.
Kirakan sisihan min bagi Jadual 4(a) di bawah.

Class	3	6	9	12	15
Frequency	1	2	4	2	1

Table 4(a)
Jadual 4(a)

[15 marks]
[*15 markah*]

CLO2 C3 (b) Calculate the variance and standard deviation for the following data.
Kirakan varians dan sisihan piawai bagi data tersebut.

7 , 9 , 3 , 1 , 5

[10 marks]
[*10 markah*]

SOALAN TAMAT

FORMULA

INDICES AND LOGARITHM

Basic of Index and Logarithm

1. $y = a^x \leftrightarrow x = \log_a y$

Rules of Index

1. $a^m \times a^n = a^{m+n}$
2. $\frac{a^m}{a^n} = a^{m-n}$
3. $(a^m)^n = a^{mn}$
4. $(ab)^n = a^n b^n$
5. $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}, b \neq 0$
6. $a^{-n} = \frac{1}{a^n}, a \neq 0$
7. $a^{\frac{m}{n}} = \sqrt[n]{a^m}$

Rules of Logarithm

1. $\log_a MN = \log_a M + \log_a N$
2. $\log_a \frac{M}{N} = \log_a M - \log_a N$
3. $\log_a N^P = P \log_a N$
4. $\log_a N = \frac{\log_c N}{\log_c a}$

STATISTIK

1. $K = 1 + 3.3 \log_{10} n$
2. $Data\ Range = Largest\ value - Smallest\ Value$
3. $Class\ Size = \frac{Data\ Range}{No.\ of\ Class}$
4. Mean
$$\bar{x} = \frac{\Sigma x}{N} = \frac{\Sigma fx}{\Sigma f}$$
5. Median $= M_e = L + \left(\frac{\frac{n}{2} - F}{f_m}\right)c$
6. Mode $= M_o = L + \left(\frac{d_1}{d_1 + d_2}\right)c$
7. Mean Deviation
$$E = \frac{\Sigma|x - \bar{x}|}{n}$$
$$E = \frac{\Sigma|x - \bar{x}|f}{\sum f}$$
8. Variance
$$s^2 = \frac{\Sigma(x - \bar{x})^2}{n}$$
$$s^2 = \frac{\Sigma x^2}{n} - (\bar{x})^2$$
$$s^2 = \frac{\Sigma(x - \bar{x})^2 f}{\sum f}$$
$$s^2 = \frac{\Sigma fx^2}{\Sigma f} - \left[\frac{\Sigma fx}{\Sigma f}\right]^2$$
9. Standard Deviation
$$s = \sqrt{s^2}$$