

SULIT



BAHAGIAN PEPERIKSAAN DAN PENILAIAN  
JABATAN PENGAJIAN POLITEKNIK  
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN MATEMATIK, SAINS DAN KOMPUTER

PEPERIKSAAN AKHIR  
SESI JUN 2014

**PBM1024 : ADVANCED MATHEMATICS 1**

**TARIKH : 28 OKTOBER 2014**  
**MASA : 8.30 AM - 10.30 AM (2 JAM)**

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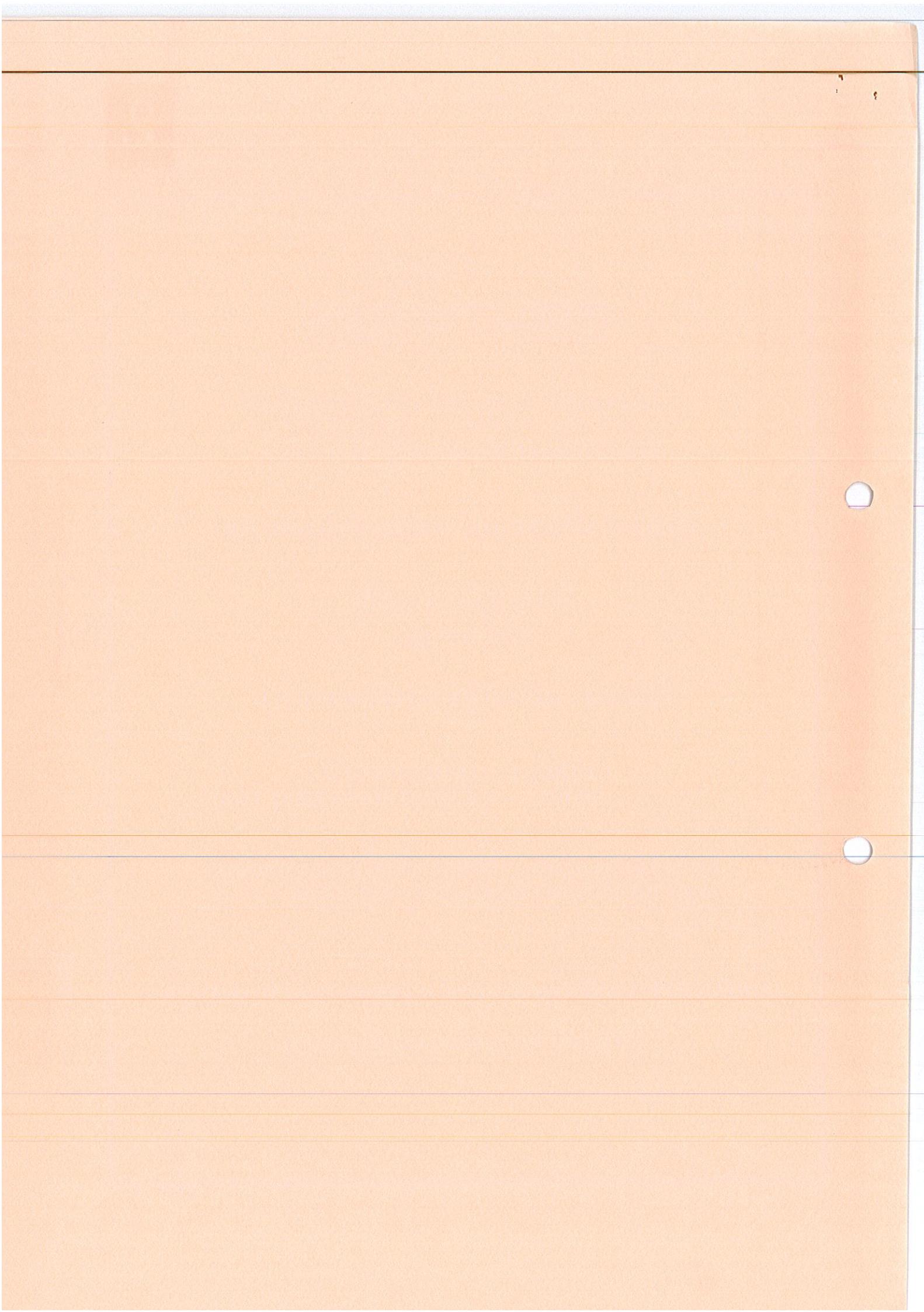
Kertas ini mengandungi **SEMBILAN (9)** halaman bercetak.  
Dokumen sokongan yang disertakan : Kertas Graf, Formula

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN**

(CLO yang tertera hanya sebagai rujukan)

SULIT



**STRUCTURE (100 MARKS)****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**

CLO 1

- (a) State each of the following indices in logarithmic form.

*Nyatakan setiap indeks yang berikut dalam bentuk log.*

C1

(i)  $4^2 = 16$

[2 marks]

[2 markah]

(ii)  $4^{-2} = \frac{1}{16}$

[2 marks]

[2 markah]

CLO 2

- (b) State each of the following logarithms in index form.

*Nyatakan setiap log yang berikut dalam bentuk indeks.*

C2

(i)  $\log_2 32 = 5$

[2 marks]

[2 markah]

(ii)  $\log_5 0.04 = -2$

[2 marks]

[2 markah]

**SULIT**

CLO 2

C2

- (c) Calculate each of the following.

*Nilaikan setiap yang berikut.*

(i)  $3^{-2} \div 3^4 \times 3^7$

[2 marks]

[2 markah]

(ii)  $8^2 \times 16^{-3} \div 4$

[5 marks]

[5 markah]

CLO 3

C3

- (d) Calculate the value of x for each of the following problems.

*Kira nilai x bagi setiap masalah yang berikut.*

(i)  $\log_7 5x = 4 \log_7 3$

[4 marks]

[4 markah]

(ii)  $2 \log_x 3 + \frac{1}{2} \log_x 16 = 2$

[6 marks]

[6 markah]

**QUESTION 2****SOALAN 2**

CLO1

C2

- a) A set of numbers,  $2, 5, x, 7, x - 6$  and  $18$ , has a mean of  $8$ .

*Satu set nombor,  $2, 5, x, 7, x - 6$  dan  $18$  mempunyai min  $8$ .*

- i. Find the value of  $x$

*Cari nilai  $x$ .*

[4 marks]

[4 markah]

- ii. Then, find the median of this set of numbers.

*Seterusnya, cari median bagi set nombor ini.*

[3 marks]

[3 markah]

CLO 2

C2

- b) The table shows the frequency of marks distribution obtained by a student in a quiz.

*Jadual di bawah menunjukkan taburan kekerapan markah yang diperoleh oleh seorang pelajar dalam suatu kuiz.*

Marks <i>Markah</i>	2	4	6	8	10
Frequency <i>Kekerapan</i>	3	4	6	4	3

Find the mean, mode and median marks of the student.

*Cari markah min, mod dan markah median pelajar itu.*

[8 marks]

[8 markah]

CLO 3  
C3

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- c) Table 1 shows the frequency distribution of a group's masses of primary students.

*Jadual 1 menunjukkan taburan kekerapan jisim bagi sekumpulan murid sekolah rendah.*

Mass (kg) <i>Jisim (kg)</i>	Number of students <i>Bilangan pelajar</i>
20 – 24	12
25 – 29	14
30 – 34	30
35 – 39	27
40 – 44	17

Table 1

*Jadual 1*

- i. Find the value of median without drawing an ogive.

*Cari nilai median tanpa melukis ogif.*

[5 marks]

[5 markah]

- ii. Draw a histogram and estimate the mode mass of the students.

*Lukis sebuah histogram dan anggarkan jisim mod murid itu.*

[5 marks]

[5 markah]

**QUESTION 3****SOALAN 3**CLO1  
C1

- (a) Calculate the mean deviation for each set of the following sample data :  
*Kirakan sisihan min bagi setiap set sampel data berikut:*

3, 2, 4, 1, 4, 4

[4 marks]

[4 markah]

CLO2  
C2

- (b) The following data shows marks gained by a student for final year examination in a class.  
*Data berikut menunjukkan markah seorang pelajar bagi peperiksaan akhir tahun di dalam sebuah kelas.*

Subject	Bahasa Melayu	English	Mathematics	Science	History	Geography	Music	Art
Marks	93	70	85	90	75	80	78	60

Find the:

*Dapatkan:*

- i. Mean deviation [6 marks]

*Sisihan min* [6 markah]

- ii. Variance [4 marks]

*Varians* [4 markah]

CLO3  
C3

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- (c) The following data shows the height of students, in cm, in a class. Find the:

*Data berikut menunjukkan tinggi pelajar, dalam cm, di dalam sebuah kelas.  
Dapatkan:*

Height (cm)	Frequency
141 – 145	1
146 – 150	1
151 – 155	2
156 – 160	6
161 – 165	5
166 – 170	2
171 – 175	1
176 – 180	2

- i. Variance.

*Varians.*

[9 marks]

[9 markah]

- ii. Standard deviation.

*Sisihan piawai*

[2 marks]

[2 markah]

**QUESTION 4****SOALAN 4**CLO 1  
C1

- a) i. Jasmin rolled a fair dice. List the sample space. [1 mark]  
*Jasmin melontar sebiji dadu. Senaraikan ruang sampel.* [1 markah]

- ii. A spinner contains the letters B, R, A, V and E. If Aisyah spins the spinner, the probability of getting any of the letters B, R, A, V or E is the same. List the sample space.

*Pemutar mengandungi huruf B, R, A, V dan E. Jika Aisyah memutarkan pemutar tersebut, kebarangkalian mendapatkan mana-mana B, R, A, V atau E adalah sama. Senaraikan ruang sampel.*

[1 mark]

[1 markah]

- iii. Two coins are tossed together.

*Dua keping duit syiling dilambung bersama-sama.*

- a. Determine the sample space and the number of outcomes.

*Dapatkan ruang sampel dan hasil nombor tersebut.*

[4marks]

[4 markah]

- b. Find the probability of getting heads and tails.

*Cari kebarangkalian untuk mendapatkan kepala dan ekor.*

[2 marks]

[2 markah]

CLO2

C2

- b) Haziq puts the below six cards in a box. If Haziq picks a card randomly from the box, find the probability of obtaining:

*Haziq meletakkan enam kad seperti di bawah ke dalam kotak. Jika Haziq mengambil kad secara rawak, cari kebarangkalian mendapatkan:*

1	6	9	16	24	36
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- i. An odd number [3 marks]  
*Nombor ganjil* [3 markah]

- ii. A positive number [2 marks]  
*Nombor positif* [2 markah]

- iii. A prime number [2 marks]  
*Nombor perdana* [2 markah]

CLO 3

C3

- c) The probability of a student coming late for school on any day is  $1/6$ . With the aid of a tree diagram, find the probability that the student is:

*Kebarangkalian seseorang pelajar datang lewat ke sekolah pada mana-mana hari adalah  $1/6$ . Dengan bantuan gambar rajah pokok, cari kebarangkalian bahawa pelajar itu adalah:*

- i. Late for school at least once in any two consecutive days.  
*Lewat ke sekolah sekurang-kurangnya sekali dalam dua hari berturut-turut.* [7 marks]  
[7 markah]

- ii. Never late for school in any two consecutive days.  
*Tidak pernah lewat ke sekolah dalam dua hari berturut-turut.* [3 marks]  
[3 markah]

## FORMULA: ADVANCED MATHEMATICS 1 (PBM 1024)

<p><b><u>INDICES AND LOGARITHM</u></b></p> <p><b><u>BASIC OF INDEX AND LOGARITHM</u></b></p> <ol style="list-style-type: none"> <li>1. <math>y = a^x \leftrightarrow x = \log_a y</math></li> </ol> <p><b><u>Rules of Index</u></b></p> <ol style="list-style-type: none"> <li>1. <math>a^m \times a^n = a^{m+n}</math></li> <li>2. <math>\frac{a^m}{a^n} = a^{m-n}</math></li> <li>3. <math>(a^m)^n = a^{mn}</math></li> <li>4. <math>(ab)^n = a^n b^n</math></li> <li>5. <math>\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}, b \neq 0</math></li> <li>6. <math>a^{-n} = \frac{1}{a^n}, a \neq 0</math></li> <li>7. <math>a^{\frac{m}{n}} = \sqrt[n]{a^m}</math></li> </ol> <p><b><u>Rules of Logarithm</u></b></p> <ol style="list-style-type: none"> <li>1. <math>\log_a MN = \log_a M + \log_a N</math></li> <li>2. <math>\log_a \frac{M}{N} = \log_a M - \log_a N</math></li> <li>3. <math>\log_a N^p = p \log_a N</math></li> <li>4. <math>\log_a N = \frac{\log_c N}{\log_c a}</math></li> </ol>	<p><b><u>STATISTIK</u></b></p> <ol style="list-style-type: none"> <li>1. Mean  <math display="block">\bar{x} = \frac{\sum x}{N} = \frac{\sum fx}{\sum f}</math> </li> <li>2. Median = <math>L + \left[ \frac{\frac{N}{2} - F}{f_m} \right] c</math></li> <li>3. Mode = <math>L + \left[ \frac{d_1}{d_1 + d_2} \right] c</math></li> <li>4. Mean Deviation  <math display="block">E = \frac{\sum  x - \bar{x} }{n}</math>  <math display="block">E = \frac{\sum  x - \bar{x}  f}{n}</math> </li> <li>5. Variance  <math display="block">s^2 = \frac{\sum (x - \bar{x})^2}{n}</math>  <math display="block">s^2 = \frac{\sum x^2}{n} - (\bar{x})^2</math>  <math display="block">s^2 = \frac{\sum (x - \bar{x})^2 f}{n}</math>  <math display="block">s^2 = \frac{\sum f x^2}{\sum f} - \left[ \frac{\sum f x}{\sum f} \right]^2</math> </li> </ol>
<p><b><u>PROBABILITY</u></b></p> $P(A) = \frac{n(A)}{n(S)}$ $P(B) = \frac{n(B)}{n(S)}$ $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ $P(A \cap B) = \frac{n(A \cap B)}{n(S)} = P(A) \times P(B)$ $P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(A \cap C) - P(B \cap C) + P(A \cap B \cap C)$	

