SULIT

POLITEKNIK MALAYSIA

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

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI JUN 2018

PBM1035: INTENSIVE MATHEMATICS

TARIKH : 27 OKTOBER 2018
MASA : 11.15 PAGI - 1.15 TENGAHARI (2 JAM)

Kertas ini mengandungi **DUA BELAS (12)** halaman bercetak.
Bahagian A: Struktur (5 soalan)
Bahagian B: Struktur (2 soalan)

Dokumen sokongan yang disertakan : Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SECTION A : 60 MARKS
BAHAGIAN A : 60 MARKAH

INSTRUCTION:

This section consists of **FIVE (5)** structured questions. Answer **THREE (3)** question only.

ARAHAN:

*Bahagian ini mengandungi **LIMA (5)** soalan struktur. Jawab **TIGA (3)** soalan sahaja.*

QUESTION 1
SOALAN 1

CLO 1
C1

a) Given the set of number $\left\{3\pi, \sqrt{11}, \sqrt{49}, 0, \frac{1}{20}, 0.004\right\}$. List down

Diberi satu set nombor $\left\{3\pi, \sqrt{11}, \sqrt{49}, 0, \frac{1}{20}, 0.004\right\}$. *Senaraikan*

i. Irrational numbers.
Nombor bukan nisbah.

[2 marks]
[*2 markah*]

ii. Natural numbers.
Nombor asli.

[1 mark]
[*1 markah*]

iii. Rational numbers.
Nombor nisbah.

[2 marks]
[*2 markah*]

CLO 1
C2

b) Compute the following problems using BODMAS RULE without using the calculator.

Kirakan masalah berikut dengan menggunakan HUKUM BODMAS tanpa menggunakan kalkulator.

i. $-11+(40\div 8)+2$

[2 marks]

[*2 markah*]

ii. $2(6+8)-15$

[2 marks]

[*2 markah*]

iii. $5\frac{2}{4}\div\left[\frac{3}{8}-\frac{1}{6}\right]$

[3 marks]

[*3 markah*]

CLO 1
C3

c) i. The original price for the set of sofa is RM 6500. Calculate the percentage discount given if the sales price is RM 4500.

Harga asal bagi set sofa adalah RM 6500. Kirakan peratusan diskaun yang diberikan jika harga jual adalah RM 4500.

[4 marks]

[*4 markah*]

ii. The price of a computer was increased by 15%. The normal price of the computer was RM 3200. Calculate the sale price of the computer.

Harga bagi sebuah komputer bertambah sebanyak 15%. Harga asal komputer tersebut adalah RM 3200. Kirakan harga jualan bagi komputer tersebut.

[4 marks]

[*4 markah*]

QUESTION 2

SOALAN 2

CLO1
C1

a) Simplify the following expressions into the lowest terms.

Permudahkan ungkapan-ungkapan berikut kepada bentuk yang terendah.

i. $\frac{7mn}{14m} \times \frac{3p}{2m}$ [2 marks]

[*2 markah*]

ii. $3(x+y)^2 - 2x(4y-5x)$ [3 marks]

[*3 markah*]

CLO1
C2

b) Factorize the given expressions completely.

Faktorkan ungkapan-ungkapan yang diberi selengkapuya.

i. $13x^2 - 2x - 11$ [2 marks]

[*2 markah*]

ii. $\frac{x^2-1}{x^2-2x-3}$ [5 marks]

[*5 markah*]

CLO1
C3

c) Solve the expression of:

Selesaikan ungkapan:

$$\frac{1}{x-2} - \frac{x^2-9}{x^2+x-6}$$

[8 marks]

[*8 markah*]

QUESTION 3

SOALAN 3

CLO1
C1

a) Given the equation of :
Diberi persamaan :

$$E = \frac{1}{2}mv^2$$

i. Make v as the subject of the equation.
Jadikan v sebagai subjek persamaan.

[3 marks]
[*3 markah*]

ii. Find the value for v if $E = 4$ and $m = 2$
Cari nilai v jika $E = 4$ *dan* $m = 2$

[2 marks]
[*2 markah*]

CLO1
C2

b) Find the value of x and y by solving the simulataneous equations below using the Substitution Method.
Cari nilai x dan y dengan menyelesaikan persamaan serentak di bawah menggunakan Kaedah Gantian.

$$x - y = 6$$
$$2x - 3y = 22$$

[7 marks]
[*7 markah*]

CLO1
C3

c) Dina deposits RM 2700 in the bank that offers a simple interest rate 6% annum.
Dina mendepositkan sebanyak RM 2700 ke dalam sebuah bank yang menawarkan kadar faedah 6% tahunan.

i. Calculate the amount that she will receive for 2 years.
Kira jumlah yang beliau akan terima selama 2 tahun.

[4 marks]
[*4 markah*]

ii. Hence, calculate the amount she will have if the interest compounded once a year.

Seterusnya, kira jumlah yang beliau akan terima jika faedahnya akan di kompaun sekali setahun.

[4 marks]

[4 *markah*]

QUESTION 4

SOALAN 4

CLO1 C1

a) Calculate the following inequalities :

Kira ketaksamaan-ketaksamaan berikut :

i. $3x + 9 \geq 27$

[2 marks]

[*2 markah*]

ii. $-5x + 1 \geq -8 + 2x$

[3 marks]

[*3 markah*]

CLO1 C2

b) Solve the following inequalities and state the interval notation.

Selesaikan ketaksamaan-ketaksamaan berikut dan tunjukkan notasi selang.

i. $3x - 8 < 7$

[3 marks]

[*3 markah*]

ii. $3(7 - y) \geq -9$

[4 marks]

[*4 markah*]

CLO1
C3

c) Solve the inequality of $8x + 8 \geq -64$ and $-7 - 8x \geq -79$. Demonstrate the solutions on the number line with interval notation.

Selesaikan ketaksamaan $8x + 8 \geq -64$ *dan* $-7 - 8x \geq -79$. *Tunjukkan penyelesaian di atas garisan nombor dengan notasi selang.*

[8 marks]

[*8 markah*]

QUESTION 5

SOALAN 5

CLO 1
C1

a) Simplify the following indices to the lowest form.

Permudahkan indeks-indeks berikut kepada bentuk yang terendah.

i. 7×7^4

[1 mark]

[*1 markah*]

ii. $\sqrt{81} \times 9 \div 243$

[4 marks]

[4 *markah*]

CLO 1
C2

b) Simplify the following indices in the lowest form.

Permudahkan indeks-indeks berikut kepada bentuk terendah.

i. $27^{2n} \times 3^{n+1} \times 9^{2n-1}$

[3 marks]

[*3 markah*]

ii. $\dfrac{2^{n+2} \times 4^{3-2n}}{8^{3n}}$

[4 marks]

[*4 markah*]

CLO 1
C3

c) Calculate the following indices without using calculator

Kira indeks-indeks berikut tanpa menggunakan kalkulator.

i. $8^{x-1} \div \frac{1}{32^x} = 16^{x+1}$

[4 marks]

[*4 markah*]

ii. $3^{x-2} = 27^{x+4}$

[4 marks]

[*4 markah*]

SECTION B: 40 MARKS

BAHAGIAN B: 40 MARKAH

INSTRUCTION:

This section consists of **TWO (2)** structured questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **DUA (2)** soalan struktur. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO2
C1

a) Given a function $f(x) = -2x^2 + 4x - 9$. Find :

Diberi fungsi $f(x) = -2x^2 + 4x - 9$. *Cari:*

i. $f(-1)$

[2 marks]
[2 *markah*]

ii. $f(5)$

[2 marks]
[2 *markah*]

iii. $f(0)$

[2 marks]
[2 *markah*]

b) Given two points A (0,5) and B (5,2) on the straight line. Calculate
Diberi dua titik A (0,5) dan B (5,2) di atas garis lurus. Kira

i. The slope AB.
Kecerunan AB.

[2 marks]
[*2 markah*]

ii. The distance AB.
Jarak AB.

[2 marks]
[*2 markah*]

iii. The equation of the straight line.
Persamaan bagi garis lurus tersebut.

[2 marks]
[*2 markah*]

CLO2
C3

c) Draw the graph of straight line $y = 5x - 3$ for range $-3 \le x \le 4$.
Lukiskan graf garis lurus $y = 5x - 3$ *bagi julat* $-3 \le x \le 4$.

[8 marks]
[*8 markah*]

QUESTION 2

SOALAN 2

CLO 3
C1

a) Find the differentiation for the following functions.

Cari pembezaan fungsi-fungsi berikut.

i. $y = -9$

[1 marks]
[1 *markah*]

ii. $y = 3x^4$

[2 marks]
[2 *markah*]

iii. $y = \dfrac{7}{x^3}$

[3 marks]
[3 *markah*]

CLO 3
C2

b) Differentiate the following functions.

Bezakan fungsi-fungsi berikut.

i. $y = 8x^{-4} + \dfrac{3}{5}x^5$

[3 marks]
[3 *markah*]

ii. $y = \dfrac{x^3 + x^2 + 5x}{x}$

[3 marks]
iii. [3 *markah*]

CLO 3
C3

c) Calculate the differentiation for the following functions.
Kirakan pembezaan untuk fungsi-fungsi berikut.

i. $y = x^2(5x^3 - 7)$

[4 marks]
[*4 markah*]

ii. $y = \dfrac{8x^3 - 4x}{2x}$

[4 marks]
[*4 markah*]

SOALAN TAMAT

FORMULA

Percentage of increase

$$p = \frac{\text{amount of increase}}{\text{original amount}} \times 100\%$$

Percentage of decrease

$$p = \frac{\text{amount of decrease}}{\text{original amount}} \times 100\%$$

Simple interest formula:

$I = p \times r \times t$, where

p = the principal or money deposited or the initial amount you borrowed
r =the rate of interest or percentage
t =time

Compound interest formula:

$A = P\left(1 + \frac{r}{n}\right)^{nt}$, where

P = the principal or money deposited or the initial amount you borrowed
r =the rate of interest or percentage
t =time
n =the number of years

Midpoint:

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

Distance:

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

Slope/ Gradient:

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

Exponent Theorem:

$a^m \times a^n = a^{m+n}$ (Product Rule of Exponent)

$a^m \div a^n = a^{m-n}$ (Quotient Rule of Exponent)

$(a^m)^n = a^{mn}$ (Power of a Power Rule)

$(ab)^m = a^m b^m$ (Power of Product Rule)

Quadratic Formula:

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

Differentiation:

If $y = a$, then $\frac{dy}{dx} = 0$

If $y = ax^n$, then $\frac{dy}{dx} = nax^{n-1}$

Where a is a constant.