SULIT

POLITEKNIK MALAYSIA

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENGAJIAN POLITEKNIK
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN MATEMATIK, SAINS DAN KOMPUTER

PEPERIKSAAN AKHIR
SESJUN 2014

PBM1014 : BASIC MATHEMATICS 1

TARIKH : 03 NOVEMBER 2014
MASA : 8.30 AM - 10.30 AM (2 JAM)

Kertas ini mengandungi TUJUH (7) halaman bercetak.
Bahagian A: Struktur (3 soalan)
Bahagian B: Struktur (2 soalan)
Dokumen sokongan yang disertakan : Kertas Graf dan Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN
(CLO yang tertera hanya sebagai rujukan)

SULIT
SECTION A : STRUCTURED (25 MARKS)
BAHAGIAN A : STRUKTUR (25 MARKAH)

INSTRUCTIONS:
This section consists of THREE (3) structured questions. Answer ALL questions.

ARAHAN:
Bahagian ini mengandungi TIGA (3) soalan berstruktur. Jawab SEMUA soalan.

QUESTION 1
SOALAN 1

(a) Convert each of the following in standard form or real numbers:
Tukarkan setiap yang berikut ke dalam bentuk piawai atau nombor nyata:

i. 432510 [2 marks]

ii. 0.0000739 [2 markah]

iii. 248.935 \times 10^5 [2 marks]

iv. 62.14 \times 10^{-3} [2 markah]

(b) Solve each of the following and state the answer in standard form:
Selesaikan setiap yang berikut dan nyatakan jawapan dalam bentuk piawai:

i. \((2.3 \times 10^4) \times (3.5 \times 10^5)\) [3 mark]

ii. \((9.3 \times 10^6) \times (7.9 \times 10^3)\) [4 mark]

iii. \((6.8 \times 10^7) + (5.7 \times 10^8)\) [5 marks]

iv. \((15.45 \times 10^5) - (7.32 \times 10^4)\) [5 markah]
QUESTION 2
SOALAN 2

(a) Simplify the algebraic fractions given below.
Permudahkan pecahan algebra yang diberi di bawah.

\[ \frac{45x^5y^3}{81x^6y^2} \] [2 marks]

\[ \frac{4x + 20}{x^2 + 5x} \] [3 marks]

\[ \frac{8x + 16}{x^2 - 4} \] [3 marks]

(b) Solve the following algebraic fraction problems and simplify the answer.
Selesaikan setiap masalah pecahan algebra yang berikut dan permudahkan jawapan.

\[ \frac{4v}{2w} + \frac{6v}{2w} \] [2 marks]

\[ \frac{2}{3x} + \frac{3}{12x} \] [2 marks]

\[ \frac{4}{5} - \frac{4p}{q} \] [3 marks]
(c) Solve the following multiplication and division problems and simplify the answer.

*Selesaikan masalah pendaraban dan pembahagian yang berikut dan permudahkan jawapan.*

i. \( \frac{3xy}{5} \times \frac{x}{6yz} \) [2 marks]

ii. \( \frac{9}{2x+3} \times \frac{8x+12}{3} \) [3 marks]

iii. \( \frac{16a}{9b^2} \div \frac{8}{3b} \) [2 marks]

iv. \( \frac{6v-18}{w^3} \div \frac{v-3}{5w} \) [3 marks]
QUESTION 3  
SOALAN 3

(a) In the diagram above, OQ=1/3 OR  
  *Dalam rajah diatas, OQ=1/3 OR*

i. Find the coordinate of Q.  
  *Cari koordinat Q.*  
  [3 marks]

ii. Find the midpoint between PQ.  
  *Cari titik tengah antara PQ*  
  [2 marks]

iii. Calculate the gradient of PR.  
  *Kira kecerunan PR*  
  [3 marks]

(b) Find the equation of the line which passes through point (4,3) and (2,6).  
  *Dapatkan persamaan garis lurus yang melalui titik (4,3) dan (2,6).*  
  [7 marks]

(c) Draw the graph for the following equation y=2x+6.  
  *Lukiskan graf bagi persamaan y=2x+6.*  
  [10 marks]
SECTION B: 25 MARKS

BAHAGIAN B: 25 MARKAH

INSTRUCTION:
This section consists of TWO (2) structured questions. Answer ONE (1) question only.

ARAHAH:
Bahagian ini mengandungi DUA (2) soalan berstruktur. Jawab SATU (1) soalan sahaja.

QUESTION 4

SOALAN 4

(a) Solve each of the following by factorization:
Selesaikan setiap yang berikut secara pemfaktoran:

i. \(9x^2 = 49\) [4 marks]

ii. \(x^2 + 2x = 15\) [4 marks]

(b) Solve:
Selesaikan:

\[
\frac{x^2}{3} = 13 - \frac{10x}{3}
\]

[7 marks]

(c) By using the quadratic formula, solve the following equation. Give your answer correct to FOUR decimal places.
Dengan menggunakan formula kuadratik, selesaikan persamaan yang berikut.
Berikan jawapan tepat kepada EMPAT titik perpuluhan.

\[3x(x + 2) + 2x(x - 4) = 8\] [10 marks]

[10 markah]
QUESTION 5
SOALAN 5

(a) Solve the simultaneous equations by using Elimination Method.
Selesaikan persamaan serentak yang berikut dengan menggunakan Kaedah Penghapusan.

\[
\frac{x}{3} + \frac{y}{2} = 3
\]
\[
2 + y = 2x
\]
[8 marks]

(b) Give the answer for \(x\) and \(y\) by using substitution method.
Berikan jawapan bagi \(x\) dan \(y\) dengan menggunakan Kaedah Penggantian.

\[
x + y = 1
\]
\[
6x + \frac{2y}{8} = 6
\]
[7 marks]

(c) The perimeter of the shape as shown in Figure 2 above is 24 cm and its area is 35 cm². Find the values of \(x\) and \(y\).
Perimeter bentuk di dalam Rajah 2 di atas adalah 24 cm dan luas adalah 35 cm². Cari nilai bagi \(x\) dan \(y\).
[10 marks]
FORMULA SHEET FOR BASIC MATHEMATICS 1 (PBM 1014)

1) Standard form :

\[ a \times 10^n \]

2) Equation of a straight line

\[ y = mx + c \]

3) Gradient:

\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]
\[ m = -\frac{y - \text{intercept}}{x - \text{intercept}} \]

3) Midpoint between two points:

\[ m = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \]

4) Distance between two points :

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

5) Quadratic Equations

i. \[ ax^2 + bx + c = 0 \]

ii. \[ x^2 - a^2 = 0 \]
\[ (x - a)(x + a) = 0 \]

6) Quadratic Formula:

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