

SULIT



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

JABATAN MATEMATIK, SAINS & KOMPUTER

PEPERIKSAAN AKHIR

SESI JUN 2019

DBM10133: MATHEMATICS FOR TECHNOLOGY

TARIKH : 01 NOVEMBER 2019

MASA : 8.30 PAGI - 10.30 PAGI (2 JAM)

Kertas ini mengandungi **SEPULUH (10)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Tiada

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** the questions.

ARAHAN:

Bahagian ini mengandungi EMPAT (4) soalan berstruktur. Jawab SEMUA soalan.

QUESTION 1**SOALAN 1**

CLO1
C3

- (a) Use the standard mathematical approach to simplify following algebra equations.

Gunakan pendekatan matematik piawai untuk mempermudah persamaan algebra di bawah.

i. $\frac{6mn+2n}{9-n^2} \div \frac{4mn}{3-n}$

[3 marks]

[3 markah]

ii. $\frac{12p-q}{2pq} - \frac{24-q}{4q}$

[4 marks]

[4 markah]

CLO1
C3

- (b) Change the subject of a formula for each of the following questions.

Tukarkan subjek bagi formula untuk setiap soalan di bawah.

- i. Figure 1 below shows the ticket price to enter the theme park.

Gambarajah di bawah memaparkan harga tiket untuk memasuki taman permainan.

Adult : RMx per person
<u>Dewasa: RMx per individu</u>
Child : RM y per person
<u>Dewasa: RM y per individu</u>

Figure 1(b)

Gambarajah 1(b)

The ticket price for 3 adults and 2 children is RM28. Write the equation of a child ticket price with an adult ticket price as a subject.

Harga tiket bagi 3 orang dewasa dan 2 kanak-kanak adalah RM28.

Tuliskan persamaan harga tiket kanak-kanak dengan menjadikan harga tiket dewasa sebagai satu subjek.

[2 marks]
[2 markah]

- ii. Change the following formula to make x in the bracket as the subject.

Tukarkan formula berikut supaya x di dalam kurungan menjadi subjek.

$$\frac{1}{5} \sqrt{\frac{w}{x}} = m \quad [x]$$

[6 marks]
[6 markah]

CLO1
C3

- (c) Price for 2 kg of mango and 1kg of orange is RM19. Price for 3kg of mango is RM11 more than 2 kg of orange. By using the substitution method, calculate;

Harga bagi 2 kg mangga dan 1 kg oren adalah RM19. Harga bagi 3 kg mangga adalah RM11 lebih daripada 2 kg oren. Dengan menggunakan kaedah penggantian, kirakan;

- i. The price in RM for 1 kg of orange.

Harga dalam RM bagi 1 kg oren.

[8 marks]
[8 markah]

- ii. Price in RM that customer should pay if he/she need 7 kg of orange.

Harga dalam RM yang sepatutnya dibayar oleh pelanggan sekiranya dia memerlukan 7 kg oren.

[2 marks]
[2 markah]

QUESTION 2

SOALAN 2

CLO1
C3

(a)

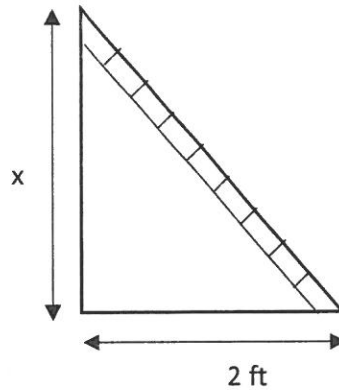


Figure 2 (a)

Gambarajah 2(a)

A ladder with 6 feet height is leaning against a building as shown in Figure 2

(a). The lowest rung of ladder and base building range is 2 feet. Calculate;

Sebuah tangga yang mempunyai ketinggian 6 kaki disandarkan pada sebuah bangunan seperti yang ditunjukkan dalam Gambarajah 2 (a). Jarak antara kaki tangga dengan dasar bangunan tersebut ialah 2 kaki. Kirakan;

i) The value of x

Nilai bagi x

[4 marks]

[4 markah]

ii) The ladder inclination angle if the range between the lowest rung of ladder and base building is 3 feet.

Sudut kecondongan tangga tersebut sekiranya jarak antara kaki tangga dengan dasar bangunan tersebut ialah 3 kaki.

[3 marks]

[3 markah]

CLO1
C3

(b)

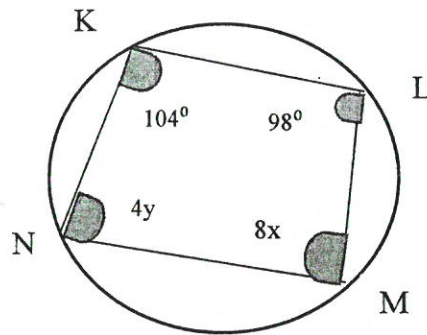


Figure 2 (b)

Gambarajah 2 (b)

Figure 2 (b) shows a cyclic quadrilaterals which has 4 points K, L, M and N. Calculate;

Gambarajah 2 (b) menunjukkan gambarajah sisi empat kitaran yang mempunyai titik K, L, M dan N. Kira;

- i) The value of x.

Nilai bagi x.

[4 marks]

[4 markah]

- ii) The value of y.

Nilai bagi y.

[4 marks]

[4 markah]

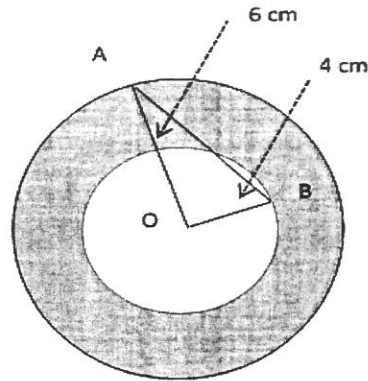


Figure 2 (c)

Gambarajah 2 (c)

CLO1
C3

- c) Figure 2 (c) above shows O is the centre of the circle. The radius of the small circle is 4 cm and the radius of the big circle is 6 cm. Determine:
Gambarajah 2 (c) di atas menunjukkan O ialah pusat kepada bulatan. Radian bagi bulatan kecil ialah 4 cm dan radian bulatan besar ialah 6 cm. Tentukan;

- i. Wide area of 4 cm radius circle.

Luas kawasan bulatan berjejari 4 cm.

[3 marks]

[3 markah]

- ii. Wide area of circular shade.

Luas kawasan bulatan yang berlorek.

[5 marks]

[5 markah]

- iii. $\angle OAB$ if $\angle OBA = 43^\circ$

$\angle OAB$ jika $\angle OBA = 43^\circ$

[2 marks]

[2 markah]

QUESTION 3

SOALAN 3

CLO1
C3

- a) Mr.Kumar intends to build prawn pond with 600 square feet area. He determine the length of the pond must 6 feet longer than the width of the pond. Constructs the equation of the wide pond area.

En.Kumar bercadang untuk membina kolam udang dengan keluasan sebanyak 600 kaki persegi. Beliau telah menentukan bahawa panjang kolam tersebut hendaklah 6 kaki lebih panjang daripada lebar. Bina persamaan bagi luas keseluruhan kolam tersebut.

[7 marks]

[7 markah]

CLO1
C3

- b) Based on the answer in question 3(a), calculate the length and the width of the prawn pond by using the formula below.

Berdasarkan jawapan di soalan 3(a), kira panjang dan lebar kolam udang tersebut menggunakan formula dibawah .

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

[8 marks]

[8 markah]

CLO1
C3

- c) Figure 3 (c) shows a pyramid with 20 meters height. If the diameter of the pyramid surface is given 10 meter, determine;

Rajah 3(c) dibawah menunjukkan sebuah piramid dengan ketinggian 20 meter. Jika diameter permukaan piramid adalah 10 meter, tentukan:

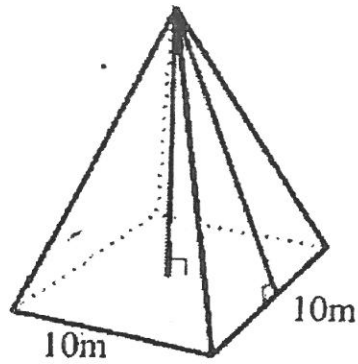


Figure 3 (c)
Rajah 3 (c)

- i) Wide of the triangle.

Luas segitiga.

[3 Marks]

[3 Markah]

- ii) Wide of the pyramid surface.

Luas permukaan keseluruhan piramid.

[4 Marks]

[4 Markah]

- iii) Entire pyramid volume.

Isipadu keseluruhan piramid.

[3 Marks]

[3 Markah]

QUESTION 4
SOALAN 4

CLO1
C3

- (a) i) Identify gradient of the straight line which link point A (1, -2) and B (-3, 5).

Kenalpasti kecerunan garis lurus yang menyambungkan titik A (1, -2) dan B (-3, 5).

[3 marks]

[3 markah]

- ii) Determine the midpoint between point A and B in a (i).

Tentukan titik tengah di antara titik A dan B di a (i).

[4 marks]

[4 markah]

CLO1
C3

- (b) Table 1 shows the value of two variables, x and y.

Jadual 1 menunjukkan nilai bagi 2 pembolehubah, x dan y..

Table 1
Jadual 1

x	-2	-1	0	1	2	3
y	-3	-1	1	3	5	7

- i) Based on the data given in Table 1, construct a graph y versus x.

Berdasarkan data pada Jadual 1, bina graf y melawan x.

[5 marks]

[5 markah]

- ii) From the graph in b (i), determine the value of the gradient and y-intercept.

Daripada graf di b (i), tentukan nilai kecerunan dan pintasan paksi-y.

[3 marks]

[3 markah]

CLO1
C3

(c)

- i) Construct a table of values for equation $y = 2x^2 - 8x + 6$ to x values from -0.5 to 4.

Bina jadual nilai-nilai untuk persamaan $y = 2x^2 - 8x + 6$ bagi nilai x dari -0.5 ke 4.

[5 marks]

[5 markah]

- ii) Draw the equation graph in c (i).

Lukiskan graf bagi persamaan di c (i).

[5 marks]

[5markah]

SOALAN TAMAT

FORMULAE FOR DBM 10133 MATHEMATICS FOR TECHNOLOGY

GEOMETRY

Radian to degree

$$(\text{value in radian}) \times \frac{180^\circ}{\pi}$$

Degree to radian

$$(\text{value in degree}) \times \frac{\pi}{180^\circ}$$

Length of arc

$$s = r \theta, \text{ where } \theta \text{ must be in radian}$$

Area of Sector

$$\text{Area of sector} = \frac{n}{360^\circ} \pi r^2, \text{ where } n \text{ angle of the sector}$$

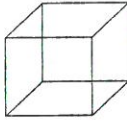
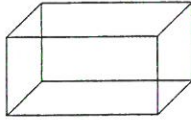
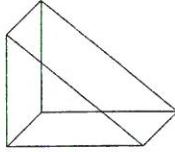
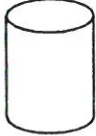
Area of segment

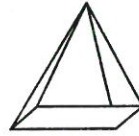
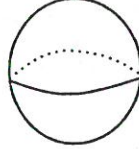
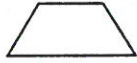
$$\frac{1}{2} r^2 (\theta - \sin \theta)$$

Pythagoras Theorem

$$c^2 = a^2 + b^2$$

MEASUREMENT

Solid	Formulae
1) Cube 	Area = $6x^2$ $V = x^3$ x: length of any edge of the cube
2) Cuboid 	Area = $2(lb + bh + lh)$ $V = l \times b \times h$
3) Prism 	Area = $bh + 2ls + lb$ s: sendeng $V = \frac{1}{2}(bh)l$
4) Cylinder 	$A = 2\pi r^2 + 2\pi rh$ $V = \pi r^2 h$

Solid	Formulae
5) Cone 	$A = \pi rs + \pi r^2$ $V = \frac{1}{3} \pi r^2 h$
6) Pyramid 	Area = $2bs + b^2$ s: sendeng $V = \frac{1}{3} b^2 h$
7) Sphere 	Area = $4\pi r^2$ $V = \frac{4}{3}\pi r^3$
8) Trapezium 	$A = \frac{1}{2} t(a+b)$

Area	Formulae
1) Circle	$\text{Area} = \pi r^2$
2) Parallelogram	$\text{Area} = bh$ b: base
3) Rectangle	$\text{Area} = lw$
4) Triangle	$\text{Area} = \frac{1}{2} (bh)$

FUNCTION AND GRAPH

Straight Lines

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

Intersection Point

$$y_2 = y_1$$

Distance between two points

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

Vertex Point

$$h = \frac{-b}{2a}$$

$$k = f(h)$$