

SULIT



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN TINGGI**

JABATAN MATEMATIK, SAINS & KOMPUTER

PEPERIKSAAN AKHIR

SESI JUN 2016

DBM1032: ELEMENTARY MATHEMATICS

TARIKH : 31 OKTOBER 2016

MASA : 8.30 AM - 10.30 AM (2 JAM)

Kertas ini mengandungi **DUA BELAS (12)** halaman bercetak.

Bahagian A: Struktur (3 soalan)

Bahagian B: Struktur (2 soalan)

Dokumen sokongan yang disertakan : Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A :75 MARKS

BAHAGIAN A :75 MARKAH

INSTRUCTION:

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

CLO 2
C2

a) Express the following algebraic fraction to the lowest term:

Nyatakan pecahan algebra berikut kepada ungkapan terkecil :

i.
$$\frac{14m^2n - 21n^2}{-28mn}$$
 [3 marks]

[3 markah]

ii.
$$8(3x - 5) - \frac{5x - 15}{10}$$
 [4 marks]

[4 markah]

iii.
$$\frac{5}{x+2} - \frac{2}{x-4}$$
 [3 marks]

[3 markah]

CLO2
C3

b) Given that, $P = \sqrt[3]{a^2 - 3bc}$, express c as the subject. [5 marks]

Diberi $P = \sqrt[3]{a^2 - 3bc}$, jadikan c sebagai perkara rumus. [5 markah]

CLO 2
C3

c) Calculate the following quadratic equations:
Selesaikan persamaan kuadrat yang berikut:

i) $x^2 - 2x - 12 = x + 6$ by using the Factorization Method [5 marks]
 $x^2 - 2x - 12 = x + 6$ menggunakan Kaedah Pemfaktoran [5 markah]

ii) $5x^2 + 2x - 1 = 0$ by using the Quadratic Formula [5 marks]
 $5x^2 + 2x - 1 = 0$ menggunakan Formula Kuadrat [5 markah]

QUESTION 2

SOALAN 2

CLO 2

a)

C3

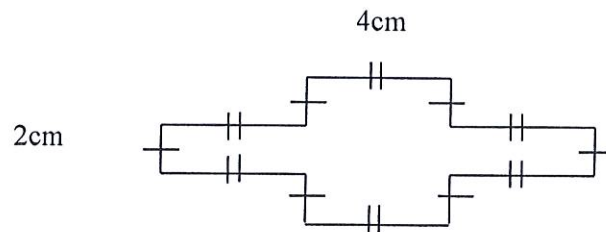


Figure 2(a) / Rajah 2(a)

- i. Find the perimeter of Figure 2(a).

[2 marks]

Cari ukur lilit Rajah 2(a).

[2 markah]

CLO 2

C3

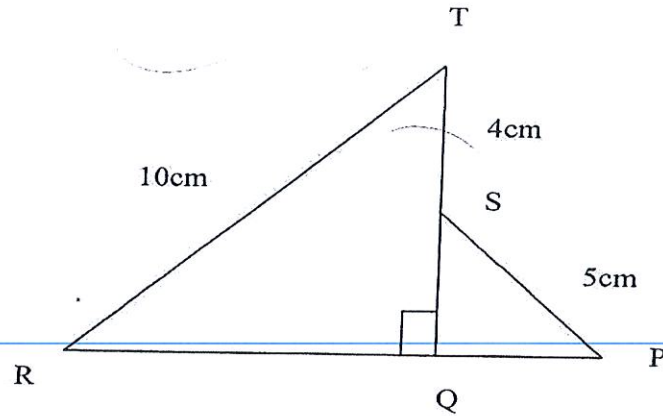


Figure 2(b) / Rajah 2(b)

- ii. In Figure 2(b), S is the midpoint of TQ and $TS = 4\text{cm}$. Find the length of PR.
Dalam Rajah 2(b), S ialah titik tengah TQ dan $TS = 4\text{cm}$. Cari panjang PR.

[7 marks]

[7 markah]

CLO 2

C3

- iii. Figure 2(c) shows a composite solid in a shape of a cylinder and a hemisphere. The cylinder and the hemisphere have the same radius of 8 cm. Calculate the volume of the solid.

Rajah 2(c) menunjukkan pepejal komposit berbentuk silinder dan hemisfera. Silinder dan hemisfera mempunyai jejari yang sama iaitu 8 cm. Kira isipadu pepejal tersebut.

[4 marks]

[4 markah]

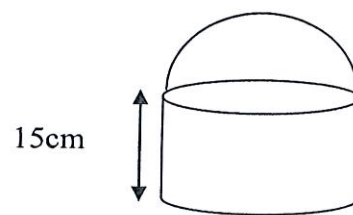


Figure 2(c)/ Rajah 2(c)

CLO 2

C3

- iv. Figure 2(d) shows a solid cylinder with a radius of 12 cm and a height of 14 cm. A circular cone with a radius of 3 cm and height of 14 cm is taken out from the solid. Calculate the volume of the remaining solid.

Rajah 2(d) menunjukkan silinder yang mempunyai jejari 12 cm dan tinggi 14 cm. Sebuah kon bulat dengan jejari 3 cm dan tinggi 14 cm dikeluarkan daripada pepejal itu. Kira isipadu pepejal yang tinggal.

[6 marks]

[6 markah]

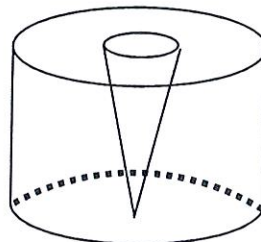


Figure 2(d) / Rajah 2(d)

CLO 2

C3

- v. Figure 2(e) shows a hemisphere and a circular cone with a radius of 3.5cm and height 6 cm. Calculate the area of both solids.

Rajah 2(e) menunjukkan sebuah separa bulatan dan sebuah kon bulat dengan jejari 3.5 cm dan tinggi 6 cm. Kira luas keseluruhan pepejal tersebut.

[6 marks]

[6 markah]

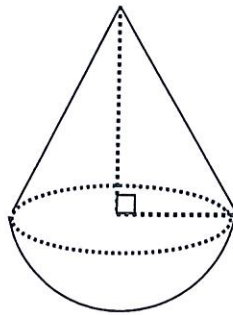


Figure 2(e)/ *Rajah 2(e)*

QUESTION 3

SOALAN 3

CLO2
C2

a) Using a calculator, find the value of :

Dengan menggunakan kalkulator, cari nilai bagi:

- i. $\sin 15^\circ$ [1 mark]
[1 markah]
- ii. $\tan 300^\circ$ [1 mark]
[1 markah]
- iii. $\cos 250^\circ 25' 78''$ [1 mark]
[1 markah]
- iv. $\operatorname{cosec} 14.5^\circ$ [2 marks]
[2 markah]
- v. $\sec 10^\circ 18' 35''$ [2 marks]
[2 markah]

CLO2
C2b) Figure 3(a) shows that ABC is right –angled triangle. Find the value of x *Rajah 3(a) menunjukkan segitiga ABC bersudut tepat. Cari nilai bagi x*

[3 marks]

[3 markah]

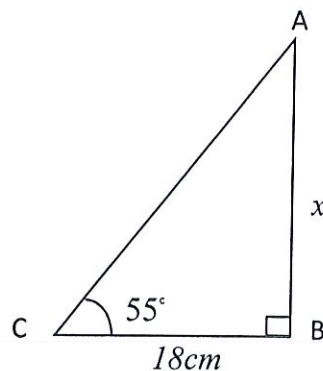


Figure 3(a)/ Rajah 3(a)

CLO2
C3

- c) Find the value of the trigonometric functions in each of the following and sketch the diagrams :

Cari nilai bagi fungsi trigonometri bagi setiap yang berikut dan lakarkan rajah setiap daripadanya :

i) $\tan(144^\circ)$

[4 marks]
[4 markah]

ii) $\cos(635^\circ)$

[5 marks]
[5 markah]

iii) $\sin\left(\frac{5}{4}\pi\right)$

[6 marks]
[6 markah]

SECTION B : 25 MARKS

BAHAGIAN B : 25 MARKAH

INSTRUCTION:

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

ARAHAN:

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

QUESTION 4

SOALAN 4

CLO1
C2

(a) Define and sketch a diagram of the following:

Berikan maksud dan lakarkan rajah bagi yang berikut:

- | | | |
|-----|----------------------|------------|
| i. | Reflex angle | [2 marks] |
| | <i>Sudut refleks</i> | [2 markah] |
| ii. | Acute angle | [2 marks] |
| | <i>Sudut tirus</i> | [2 markah] |
| i. | Obtuse angle | [2 marks] |
| | <i>Sudut cakah</i> | [2 markah] |

CLO1
C2

(b) In Figure 4 (a), p and q are complementary angles. Given that, $p = 55^\circ$, calculate the value of q .

Dalam Rajah 4 (a), p dan q adalah sudut pelengkap. Diberi, $p = 55^\circ$, kirakan nilai q .

[4 marks]
[4 markah]

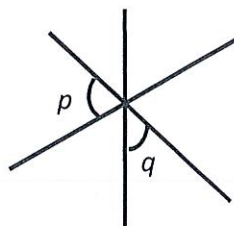


Figure 4 (a) / Rajah 4 (a)

CLO1
C3

(c) In Figure 4 (b), AB is parallel to CDE. Determine the value of z.

Dalam Rajah 4 (b), AB adalah selari dengan CDE. Tentukan nilai z.

[4 marks]

[4 markah]

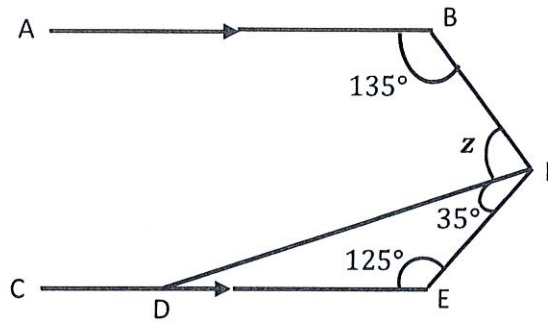


Figure 4 (b) / Rajah 4 (b)

CLO1
C3

(d) In Figure 4 (c), GCF is a tangent to the circle with centre O at C. Find the value of x, y and z.

Dalam Rajah 4 (c), GCF adalah tangen pada bulatan dengan pusat O pada C. Cari nilai x, y dan z.

[11 marks]

[11 markah]

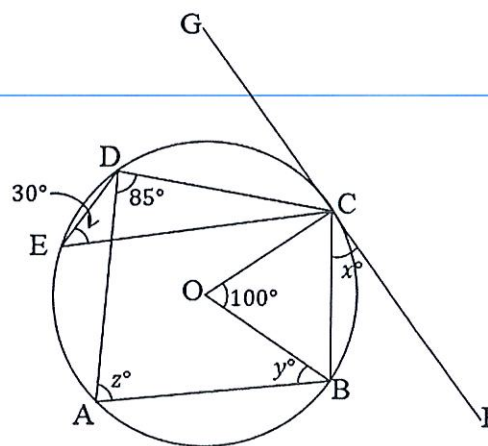


Figure 4 (c) / Rajah 4 (c)

QUESTION 5

SOALAN 5

CLO1
C2

- a) i. Convert 181.21° into radian and 0.76 rad into degree.
Tukarkan 181.21° kepada radian dan 0.76 rad kepada darjah.

[4 marks]

[4 markah]

- ii. Figure 5(a) below shows three right-angle triangle ABC, ABD and CBD. Find the length of AD.

Rajah 5(a) di bawah menunjukkan tiga segitiga bersudut tepat ABC, ABD dan CBD. Kirakan panjang bagi AD.

[6 marks]

[6 markah]

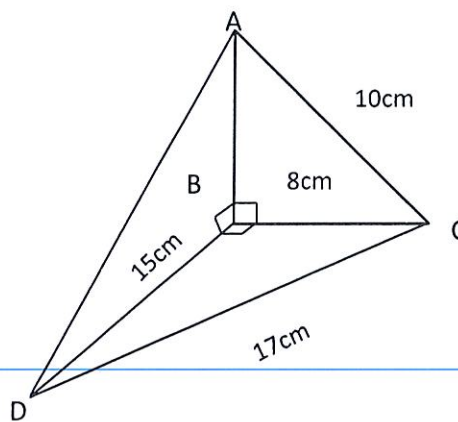


Figure 5(a)/Rajah 5(a)

CLO1
C3

- b) i. Calculate the circumference of circle with a radius of 2.33 cm.
Kirakan lilitan bulatan yang mempunyai jejari 2.33 cm.

[2 marks]

[2 markah]

- ii. Calculate the length of arc for Figure 5(b).
Kirakan panjang lengkok untuk Rajah 5(b).

[3 marks]

[3 markah]

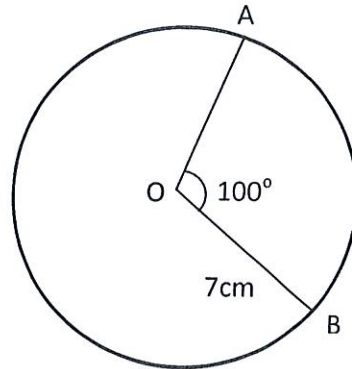


Figure 5(b)/Rajah 5(b)

- iii. In Figure 5(c) below, the area of the shaded region with centre O is 25.2 cm^2 .
 Calculate the radius of the circle, r .

Dalam Rajah 5(c) di bawah, luas rantau berlengk berpusat di O adalah 25.2 cm^2 . Kirakan jejari bulatan, r .

[4 marks]

[4 markah]

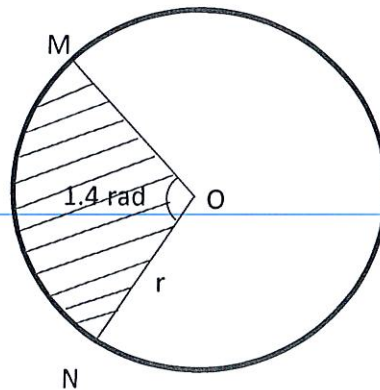


Figure 5(c)/Rajah 5(c)

- iv. In Figure 5(d), R is the centre of the circle and PQR is a right-angle triangle. Calculate the perimeter of the whole diagram.

Dalam Rajah 5(d), R ialah pusat bulatan dan PQR ialah segitiga bersudut tepat. Kirakan ukur lilit rajah.

[6 marks]

[6 markah]

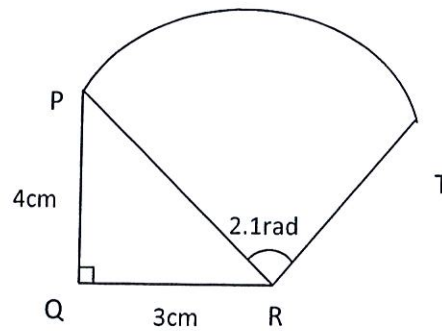


Figure 5(d)/Rajah 5(d)

SOALAN TAMAT

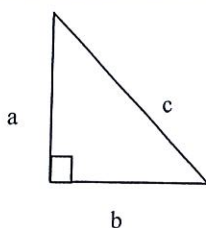
FORMULA SHEET FOR ELEMENTARY MATHEMATICS (DBM1032)

SOLVING QUADRATIC EQUATION

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

TRIGONOMETRY

Pythagoras' Theorem



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

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

MEASUREMENT

Arc Length of a Circle

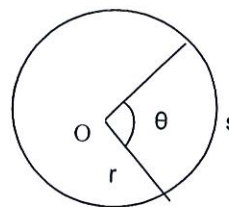
$$s = r\theta$$

Area of a Sector

$$A = \frac{1}{2}r^2\theta$$

Area of a Segment

$$A = \frac{1}{2}r^2\theta - \frac{1}{2}r^2 \sin \theta$$



FORMULA OF TRIANGLE

$$\text{Area of Triangle} = \frac{1}{2}ab \sin C$$

SURFACE AREA AND VOLUME

Cylinder : $A = 2\pi r h + 2\pi r^2$

$$V = \pi r^2 h$$

Cone : $A = \pi r s + \pi r^2$

$$V = \frac{1}{3} \pi r^2 h$$

Sphere : $A = 4\pi r^2$

$$V = \frac{4}{3} \pi r^3$$

Pyramid : $A = \text{area of four triangles} + \text{area of base}$
 $V = (1/3) \times (\text{area of base}) \times (\text{height})$

Cuboid : $A = 2(wh + lw + lh)$

$$V = lwh$$