

SULIT



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

JABATAN MATEMATIK, SAINS & KOMPUTER

PEPERIKSAAN AKHIR

SESI JUN 2017

DBM1032 : ELEMENTARY MATHEMATICS

TARIKH : 25 OKTOBER 2017

MASA : 8.30 PAGI - 10.30 PAGI (2 JAM)

Kertas ini mengandungi **TIGA BELAS (13)** 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

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

CLO2
C2

- (a) Express the following in the simplest form :

Nyatakan yang berikut dalam sebutan teringkas:

i. $\frac{8p^5q^3r}{64p^3q^2}$

[2 marks]

[2 markah]

ii. $\frac{k}{6n} - \frac{(1-k)}{2n}$

[3 marks]

[3 markah]

iii. $\frac{t}{10w} \times \frac{5w^3}{3t^2}$

[2 marks]

[2 markah]

iv. $\frac{4+m}{m} \div \frac{2-m}{m^2}$

[3 marks]

[3 markah]

SULIT

CLO2
C3

(b)

- i. Define
- q
- for the following term :

Ungkapkan nilai q :

$$\frac{p-5q}{q} = r+1$$

[5 marks]

[5 markah]

- ii. Solve the quadratic equation below by using factorization method.

Selesaikan persamaan kuadratik di bawah dengan menggunakan kaedah pemfaktoran:

$$4x^2 = 3(4x-3)$$

[4 marks]

[4 markah]

- iii. Solve the quadratic equation below by using quadratic formula method.

Selesaikan persamaan kuadratik di bawah dengan menggunakan kaedah formula kuadratik:

$$(x-3)^2 = 2(x+5)$$

[6 marks]

[6 markah]

QUESTION 2

SOALAN 2

CLO2
C3

(a)

- i. In Diagram 2a (i), ABCD is a trapezium and CEFG is a rectangle. Calculate the perimeter and area of the shaded region.

Dalam Rajah 2a (i), ABCD adalah satu trapezium dan CEFG adalah segi empat tepat. Kira perimeter dan luas kawasan berlorek.

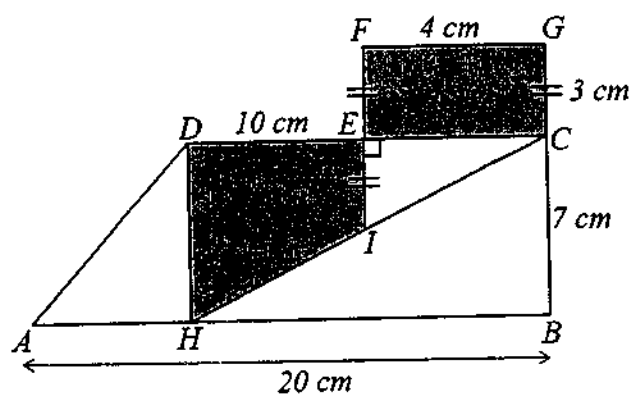


Diagram 2a (i) / Rajah 2a (i)

[11 marks]

[11 markah]

- ii. Diagram 2a (ii) shows a cuboid with a semi cylinder is being removed. The length, width and high of the cuboid are 13 cm, 7 cm and 4 cm respectively. Calculate the total surface area of the remaining solid.

Rajah 2a (ii) menunjukkan sebuah kuboid dimana separuh silinder telah dikeluarkan. Panjang, lebar dan tinggi kuboid tersebut masing-masing adalah 13 cm, 7 cm dan 4 cm. Kirakan jumlah luas permukaan pepejal yang tinggal.

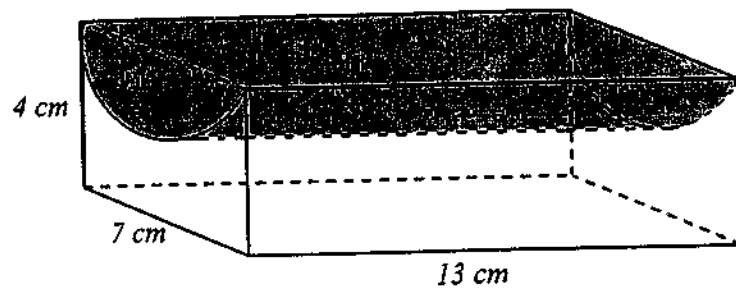


Diagram 2a (ii) / Rajah 2a (ii)

[14 marks]

[14 markah]

QUESTION 3

SOALAN 3

CLO2
C2

- (a) By referring to Diagram 3 (a), given that $\operatorname{cosec} x = \frac{13}{12}$. Calculate:

Dengan berpandukan Rajah 3 (a), diberi, $\operatorname{cosec} x = \frac{13}{12}$. Kira:

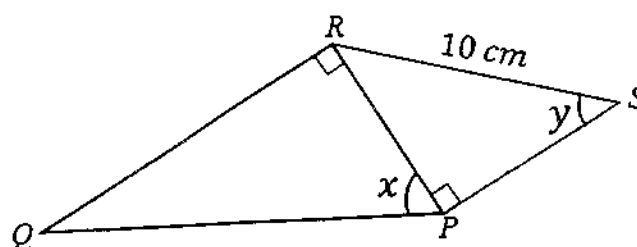


Diagram 3 (a) / Rajah 3 (a)

- i. length of RP
panjang RP

[2 marks]

[2 markah]

- ii. $\cos x$

[1 mark]

[1 markah]

- iii. $\sin y$

[1 mark]

[1 markah]

- iv. $\cot y$

[4 marks]

[4 markah]

- v. value of y .
nilai y .

[2 marks]

[2 markah]

SULIT

CLO2
C3

- (b) Calculate the values of the following trigonometric functions by using reference angle and state the quadrant.

Kira nilai-nilai bagi fungsi trigonometri yang berikut dengan menggunakan sudut rujukan dan nyatakan sukuannya.

i. $\sin 145^\circ$

[4 marks]

[4 markah]

ii. $\cos (-114^\circ)$

[5 marks]

[5 markah]

iii. $\cot 150^\circ$

[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)

- i. In Diagram 4a (i), all the lines shown are straight lines. Identify and list down the corresponding angles and alternate angles.

Dalam Rajah 4a (i), semua garisan adalah bergaris lurus. Kenal pasti dan senaraikan sudut sepadan dan sudut alternatif.

[4 marks]

[4 markah]

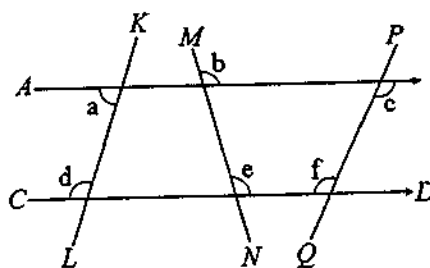


Diagram 4a (i) / Rajah 4a (i)

- ii. In Diagram 4a (ii), PQR and SQT are straight lines. Calculate the value of $x - y$.

Dalam Rajah 4a (ii), PQR dan SQT adalah garis lurus. Kirakan nilai bagi $x - y$.

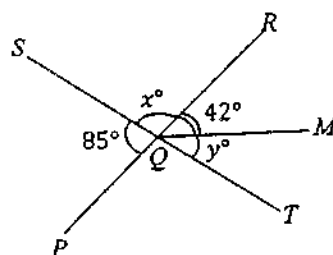


Diagram 4a (ii) / Rajah 4a (ii)

[6 marks]

[6 markah]

CLO1
C3

(b)

- i. In Diagram 4b (i), ED is a tangent to the circle ABCD with O at the center. Given that OFC and BFD are straight lines. Calculate the value of x , y and z .

Dalam Rajah 4b (i), ED adalah tangen kepada bulatan ABCD dengan berpusatkan O. Diberi OFC dan BFD adalah garis-garis lurus. Kirakan nilai bagi x , y dan z .

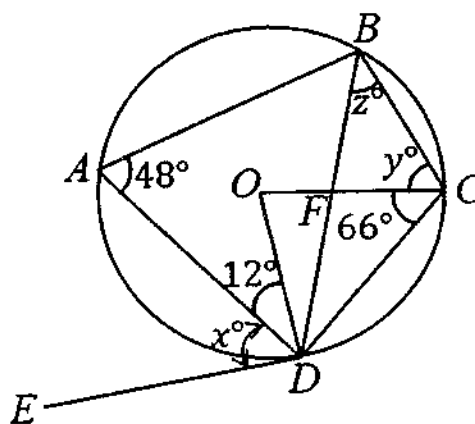


Diagram 4b (i) / Rajah 4b (i)

[8 marks]

[8 markah]

- ii. Diagram 4b (ii) shows a tangent PQ to the circle with centre at O . POR and SOQ are straight lines. Calculate the value of x , y and z :

Rajah 4b (ii) menunjukkan satu tangen PQ kepada bulatan yang berpusat di O . POR dan SOQ adalah garis-garis lurus. Kirakan nilai bagi x , y dan z :

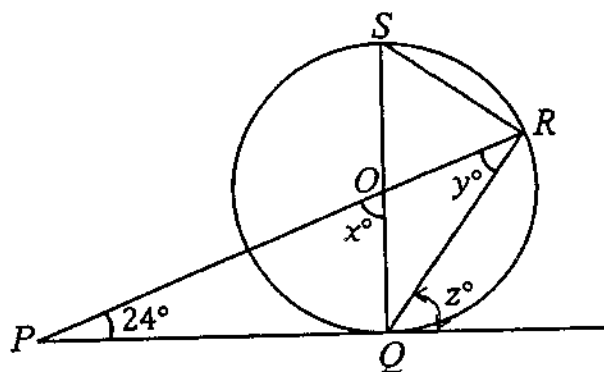


Diagram 4b (ii) / Rajah 4b (ii)

[7 marks]

[7 markah]

QUESTION 5

SOALAN 5

CLO1
C2

(a)

- i. In Diagram 5a (i), E is the midpoint of AD. Calculate the value of AC.

Dalam Rajah 5a (i), E ialah titik tengah AD. Kira nilai bagi AC.

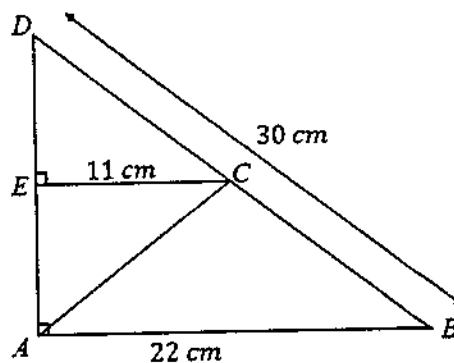


Diagram 5a (i) / Rajah 5a (i)

[6 marks]

[6 markah]

- ii. Convert the following angles:

Tukarkan sudut-sudut yang berikut:

a. $\frac{5\pi}{9}$ rad to degree

$\frac{5\pi}{9}$ rad kepada darjah

[2 marks]

[2 markah]

b. $321^{\circ}23'$ to radian

$321^{\circ}23'$ kepada radian

[2 marks]

[2 markah]

CLO1
C3

(b)

- i. Diagram 5b (i) shows two sectors OPQ and ORS with their centers at O . Given that $OP = PR = 6$ cm. Calculate:

Rajah 5b (i) menunjukkan dua sektor OPQ dan ORS yang berpusat di O . Diberi $OP = PR = 6$ cm. Kirakan:

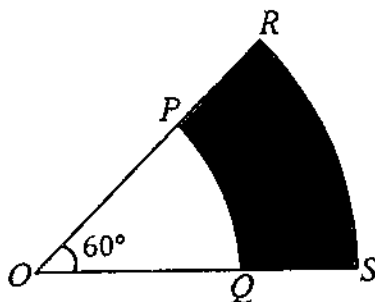


Diagram 5b (i) / Rajah 5b (i)

- a. The value of $\angle ROS$ in radian.

Nilai $\angle ROS$ dalam radian.

[2 marks]

[2 markah]

- b. The area of the shaded region.

Luas kawasan yang berlorek.

[6 marks]

[6 markah]

- ii. In Diagram 5b (ii), EFGH is a square and HJK is an arc of a circle with center at E. The area of EFGH is 324 cm^2 . Calculate the length of arc HJK.

Dalam Rajah 5b (ii), EFGH ialah segi empat sama dan HJK ialah satu lengkungan kepada bulatan yang berpusat di E. Luas EFGH adalah 324 cm^2 . Kirakan panjang lengkungan HJK.

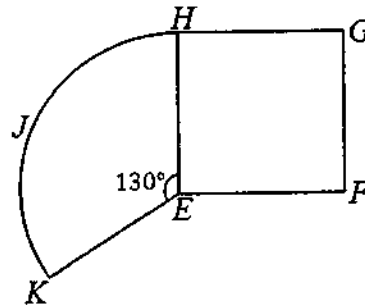


Diagram 5b (ii) / Rajah 5b (ii)

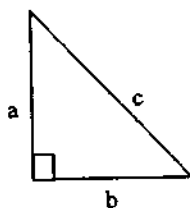
[7 marks]

[7 markah]

SOALAN TAMAT

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

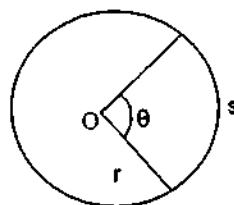
$$s = r\theta$$

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

$$\begin{aligned} \text{Cylinder : } A &= 2\pi rh + 2\pi r^2 \\ V &= \pi r^2 h \end{aligned}$$

$$\text{Cone : } A = \pi rs + \pi r^2$$

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

$$\text{Sphere : } A = 4\pi r^2$$

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

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

$$\begin{aligned} \text{Cuboid : } A &= 2(wh + lw + lh) \\ V &= lwh \end{aligned}$$