SULIT

POLITEKNIK MALAYSIA

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN TINGGI

JABATAN MATEMATIK, SAINS DAN KOMPUTER

PEPERIKSAAN AKHIR

SESI JUN 2015

DBM1032: ELEMENTARY MATHEMATICS

TARIKH : 21 OKTOBER 2015
MASA : 2.30 PM - 4.30 PM (2 JAM)

Kertas ini mengandungi **LIMA BELAS (15)** halaman bercetak.
Bahagian A: Struktur (3 soalan, jawab SEMUA)
Bahagian B: Struktur (2 soalan, jawab 1 soalan)

Dokumen sokongan yang disertakan : Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SECTION A: 75 MARKS

BAHAGIAN A: 75 MARKAH

INSTRUCTION:

This section consists of **THREE (3)** structured questions. Answer **ALL** question.

ARAHAN:

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

QUESTION 1

SOALAN 1

CLO2
C3

a) Simplify the following terms:

Permudahkan ungkapan algebra di bawah :

i. $\frac{p+5}{5p} - \frac{4-p}{p}$ [3 marks]

[*3 markah*]

ii. $4m(m-3n)-(3m-n)^2$ [3 marks]

[*3 markah*]

iii. $\frac{2x^2+5x-3}{x^2-9}$ [3 marks]

[*3 markah*]

CLO2
C3

b) Express L in terms of I, R, V, W *and* c [6 marks]

Ungkapkan L dalam sebutan I,R,V,W dan C [*6 markah*]

$$I = \frac{V}{\sqrt{R^2 + \left(WL - \frac{1}{WC}\right)^2}}$$

CLO2
C3

c) Solve the quadratic equations by factorization:-

Selesaikan persamaan kuadratik di bawah melalui kaedah pemfaktoran:-

$$\frac{x-3}{2} = \frac{4}{x+4}$$

[5 marks]

[*5 markah*]

CLO2
C3

d) Solve the quadratic equation by quadratic formula:-

Selesaikan persamaan kuadratik di bawah melalui kaedah formula kuadratik:-

$$5x^2 + 2 = 7x$$

[5 marks]

[*5 markah*]

QUESTION 2

SOALAN 2

CLO2
C3

a) In figure 2(a), BCD is a semicircle. Find the perimeter and area of the composite shape ABCD

Dalam rajah 2(a), BCD ialah semi bulatan. *Cari perimeter dan luas bentuk komposit ABCD .*

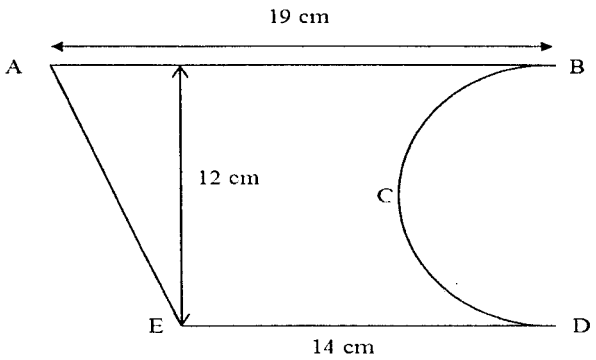


Figure 2(a) Rajah 2(a)

[12 marks]

[*12 markah*]

CLO2
C3

b) In Figure 2 (b), PQTW is a trapezium and RTUV is a parallelogram. It is given that RT = 7 cm. Calculate the area, in cm^2, of the shaded region.

Dalam Rajah 2 (b), PQTW ialah sebuah trapezium dan RTUV ialah parallelogram. Diberi RT = 7 cm. Kirakan luas, dalam cm^2, kawasan berlorek.

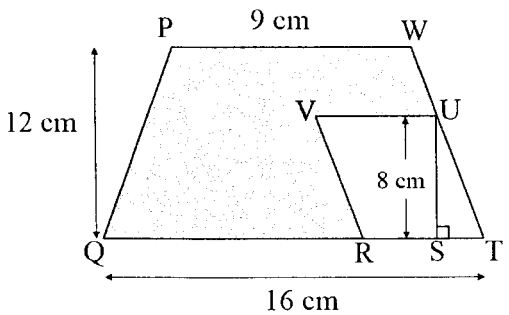


Figure 2 (b) / *Rajah 2 (b)*

[5 marks]

[*5 markah*]

CLO 2
C3

c) Figure 2 (c) shows a conical glass drinkware and a cylindrical glass drinkware. The conical glassware is fully filled with orange juice. The orange juice from the conical glassware is then poured into the cylindrical glass. Calculate:
Rajah 2 (c) menunjukkan gelas minuman berbentuk kon dan silinder. Gelas berbentuk kon dipenuhi dengan jus oren. Kesemua jus dalam gelas kon tersebut kemudiannya dituang ke dalam gelas silinder. Kirakan:

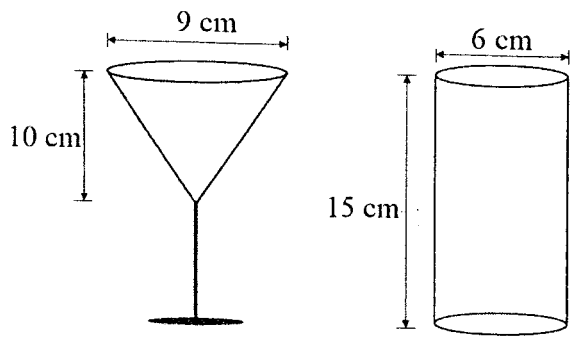


Figure 2 (c) / Rajah 2 (c)

i. The height of the orange juice in the cylindrical glass.
Ketinggian jus dalam gelas silinder tersebut.

[4 marks]
[*4 markah*]

ii. Hence, find the volume of orange juice required to fully fill the cylindrical glass.
Seterusnya, cari isipadu jus oren yang perlu ditambah bagi memenuhi gelas silinder tersebut.

[4 marks]
[*4 markah*]

QUESTION 3
SOALAN 3

CLO2
C3

(a) i. Given $\cot\theta = \frac{3}{8}$. Find the value of $\sin\theta$. [4 marks]
Diberi $\cot\theta = \frac{3}{8}$ *. Cari nilai bagi* $\sin\theta$. [*4 markah*]

ii. State the quadrant and determine whether the value of each of the following is positive or negative.
Nyatakan sukuan dan tentukan samada setiap yang berikut adalah bernilai positif atau negatif.

a. $\cos 120°$ [2 marks]
[*2 markah*]

b. $\tan 330°$ [2 mark]
[*2 markah*]

c. $\sin 240°$ [2 marks]
[*2 markah*]

iii. Find the value of $\sin 140°$ by using a reference angle.
Cari nilai bagi $\sin 140°$ *dengan menggunakan sudut rujukan.*

[2 marks]
[*2 markah*]

iv. Find the value of θ in radian for each of the following :
Cari nilai bagi θ *dalam unit radian bagi yang berikut :*

a. $\tan\theta = 0.7123$ [2 marks]
[*2 markah*]

b. $\sec\theta = 2.2021$ [3 marks]
[*3 markah*]

v.

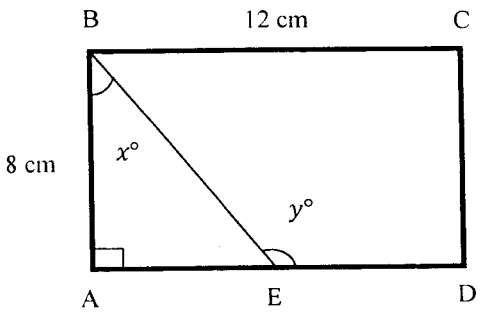


Figure 3(a) / *Rajah 3(a)*

Based on the Figure 3(a) above, ABCD is a rectangle and E is the midpoint of AD. Determine :

Berdasarkan Rajah 3(a)di atas, ABCD ialah segi empat tepat dan E ialah titik tengah AD. Tentukan :

a. angle $x°$ and $y°$ [6 marks]
sudut $x°$ *dan* $y°$ [*6 markah*]

b. sin $x°$ [2 marks]
sin $x°$ [*2 markah*]

SECTION B : 50 MARKS
BAHAGIAN B : 50 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
C1

(a) Name and sketch the angles below:

Nama dan lakarkan sudut-sudut berikut:

i. $\theta = 86°$ [2 marks]
[*2 markah*]

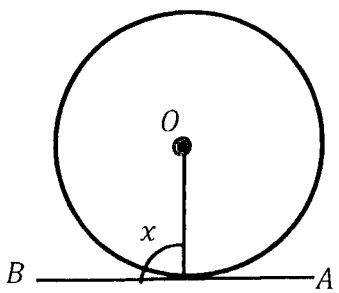
ii. $\theta = 300°$ [2 marks]
[*2 markah*]

iii. $\theta = 127°$ [2 marks]
[*2 markah*]

CLO1
C1

(b) Find the values of x for each of the following figure below.
Cari nilai-nilai x bagi setiap gambarajah di bawah.

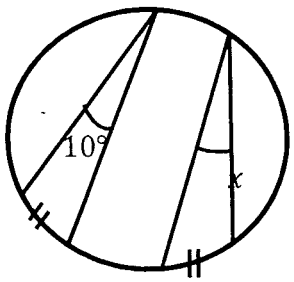
i. In figure 4(b)(i), O is a centre and BA is tangent to the circle



[1 mark]

Figure 4b(i) */Rajah 4b(i)* [*1 markah*]

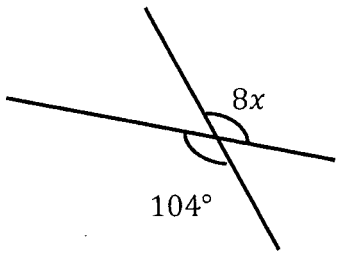
ii. [1 mark]



[*1 markah*]

Figure 4(b)(ii)/ *Rajah 4(b)(ii)*

iii. [2 marks]



[*2 markah*]

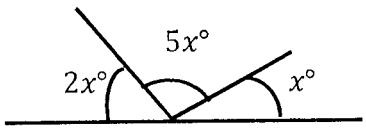
Figure 4(b)(iii)/ *Rajah 4(b)(iii)*

CLO1
C2

(c) Find the values of x.

Cari nilai-nilai x.

i. [2 marks]



[*2 markah*]

Figure 4(c)(i)/ *Rajah 4(c)(i)*

ii. [2 marks]

[*2 markah*]

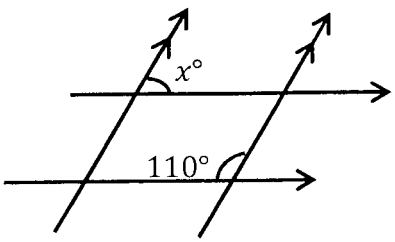


Figure 4(c)(ii)/ *Rajah 4(c)(ii)*

iii. [2 marks]

[*2 markah*]

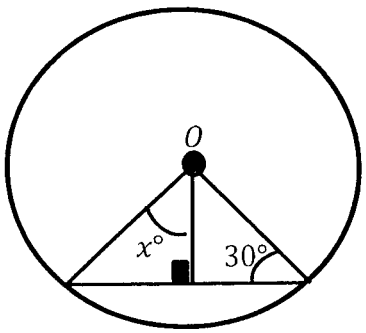


Figure 4(c)(iii)/ *Rajah 4(c)iii)*

iv. [2 marks]

[*2 markah*]

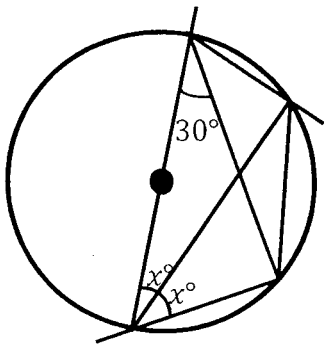


Figure 4(c)(iv)/ *Rajah 4(c)(iv)*

CLO1
C2

v. [3 marks]

[*3 markah*]

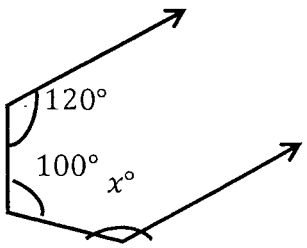


Figure 4(c)(v)/ *Rajah 4(c)(v)*

(d) Find the value of $x + y + z$. [4 marks]

Cari nilai $x + y + z$ [*4 markah*]

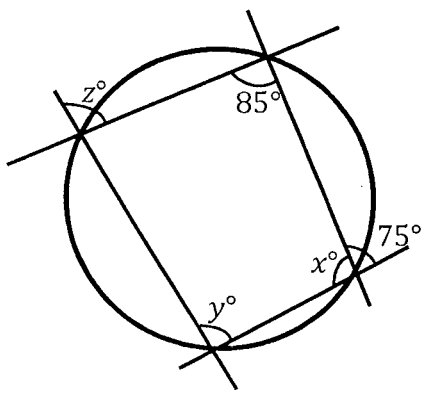


Figure 4(d)/ *Rajah 4(d)*

QUESTION 5

SOALAN 5

CLO 1
C1

a) i. Figure 5(a)(i) ABCD is a kite. The diagonal cuts at the right angle and intersect at O. Find the length of diagonal AC ?

Rajah 5(a)(i) ABCD adalah layang-layang. Pepenjuru memotong pada sudut tepat dan bersilang di O. Cari panjang pepenjuru AC?

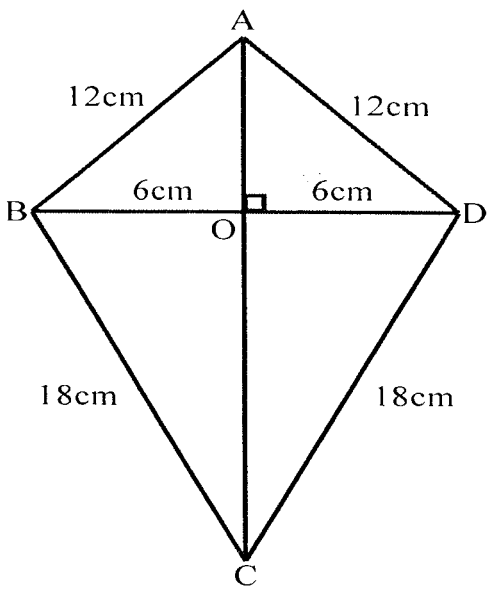


Figure 5(a)(i)/ *Rajah 5(a)(i)*

[6 marks]

[*6 markah*]

ii. Find the length of arc, s for figure 5(a)(ii) :

Cari panjang lengkok, s untuk gambar rajah 5(a)(ii):

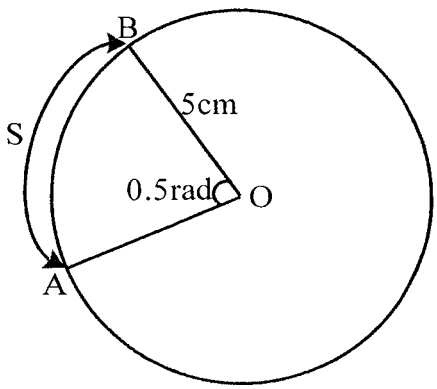


Figure 5(a)(ii)/ *Rajah 5(a)(ii)*

[2marks]

[*2 markah*]

iii. Find the area of the minor sector AOB in figure 5(a)(iii) :

Cari luas sektor kecil AOB dalam bulatan untuk rajah 5(a)(iii):

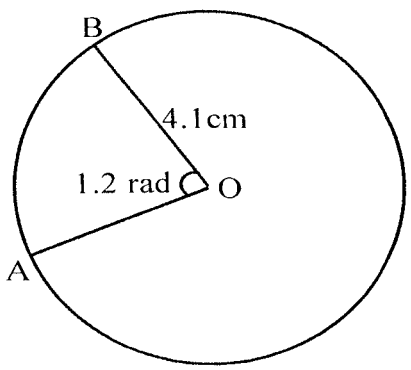


Figure 5(a)(iii)/ *Rajah 5(a)(iii)*

[2marks]

[*2 markah*]

CLO 1
C2

b) i. Convert 179.91^0 and 51.43^0 into radians. [4 marks]

Tukarkan 179.91^0 dan 51.43^0 *dalam radian.* [*4 markah*]

ii. In figure 5(b)(ii), given that the angle of the minor sector is $\frac{3\pi}{11} rad$ and the length of arc is 64cm. Calculate the radius of the circle, r and the area of the shaded region.

Dalam rajah 5(b)(ii), diberi sudut sektor kecil adalah $\frac{3\pi}{11} rad$ *dan panjang lengkuk adalah 64cm. Kirakan jejari bulatan, r dan luas kawasan berlorek untuk bulatan.*

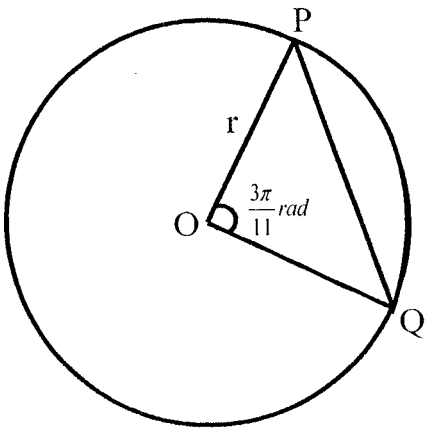


Figure 5(b)(ii)/ *Rajah 5(b)(ii)*

[11 marks]

[*11 markah*]

SOALAN TAMAT