SULIT

POLITEKNIK MALAYSIA

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

JABATAN MATEMATIK, SAINS & KOMPUTER

PEPERIKSAAN AKHIR

SESI JUN 2018

DBM1032: ELEMENTARY MATHEMATICS

TARIKH : 31 OKTOBER 2018
MASA : 11.15 PAGI - 1.15 TENGAHARI (2 JAM)

Kertas ini mengandungi **EMPAT BELAS (14)** 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)

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. $\dfrac{12x-2x^2}{8x+14}$

[2 marks]

[*2 markah*]

ii. $\dfrac{x+2}{3x}+\dfrac{x-3}{6x}$

[3 marks]

[*3 markah*]

iii. $\dfrac{2x}{x+1}+\dfrac{3}{(x+1)^2}$

[2 marks]

[*2 markah*]

iv. $\dfrac{6}{3x+3y}-\dfrac{x}{x^2-xy}$

[3 marks]

[*3 markah*]

CLO2
C3

(b)

i. Show x as the subject :
Tunjukkan x sebagai subjek :

$$T = \sqrt{\frac{ax-u}{v+bx}}$$

[5 marks]
[*5 markah*]

ii. Solve the quadratic equation below by using factorization method:
Selesaikan persamaan kuadratik di bawah dengan menggunakan kaedah pemfaktoran:

$$7x^2 - 34x - 5 = 0$$

[4 marks]
[*4 markah*]

iii. Solve the quadratic equation below by using quadratic formula:
Selesaikan persamaan kuadratik di bawah dengan menggunakan formula kuadratik.

$$4x^2 - 22 = x^2 + 5$$

[6 marks]
[*6 markah*]

QUESTION 2

SOALAN 2

CLO2 C3

a)

i.

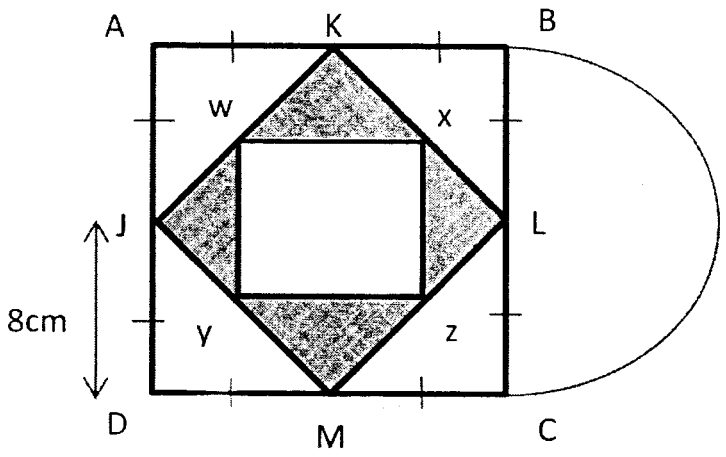


Diagram 2a(i) / *Rajah 2a(i)*

In Diagram 2a(i), ABCD, WXZY and JKLM are squares. Calculate the area of the shaded region and perimeter of arc BC in cm^2 unit.

Di dalam Rajah 2a(i), ABCD, WXZY dan JKLM adalah segiempat. Kirakan luas rantau yang berlorek dan perimeter lengkok BC dalam unit cm^2.

[13 marks]

[*13 markah*]

ii.

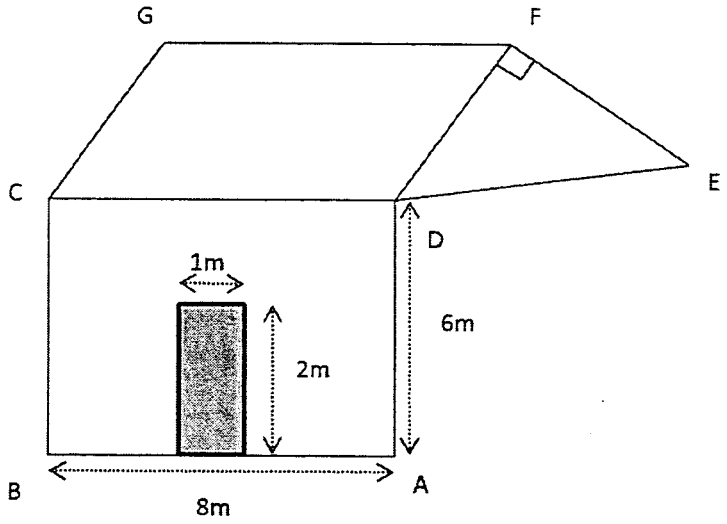


Diagram 2a(ii) / *Rajah 2a(ii)*

In Diagram 2a(ii), ABCD is a rectangle and CDFG is a parallelogram. If AD=DF and CD=DE, calculate the perimeter in centimeter (cm) of the whole diagram **except** the shaded area.

Di dalam Rajah 2a(ii), ABCD adalah segiempat tepat dan CDFG adalah suatu jajaran paralelogram. Jika AD=DF dan CD=DE, kirakan perimeter dalam sentimeter (cm) keseluruhan gambarajah ***kecuali*** *kawasan berlorek.*

[12 marks]

[*12 markah*]

QUESTION 3
SOALAN 3

CLO2
C2

a) By referring to Diagram 3(a), given $cot\ \theta = \frac{12}{5}$. Calculate:

Merujuk kepada Rajah 3(a), diberi $cot\ \theta = \frac{12}{5}$. *Kirakan:*

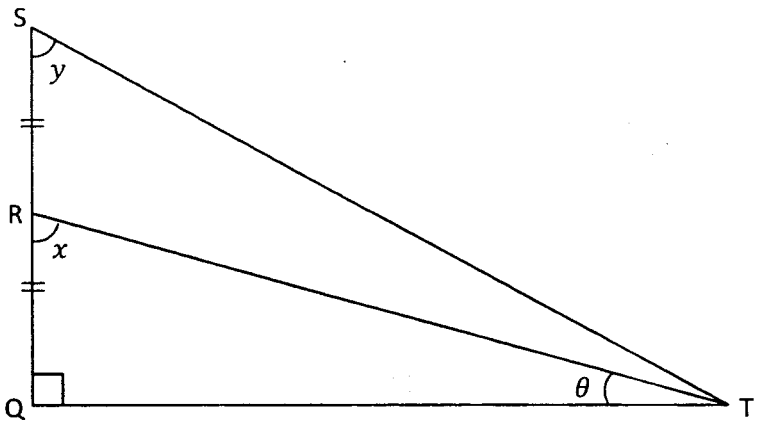


Diagram 3(a) / *Rajah 3(a)*

i. Length of QS
Panjang QS

[2 marks]
[*2 markah*]

ii. Sin x
Sin x

[2 marks]
[*2 markah*]

iii. Angle of y
Sudut y

[3 marks]
[*3 markah*]

iv. Sec x
Sec x

[3 marks]
[*3 markah*]

CLO2
C3

b) Calculate the value of the following trigonometric functions without using calculator and state its quadrant.

Kirakan nilai-nilai bagi fungsi trigonometri yang berikut tanpa menggunakan kalkulator dan nyatakan sukuannya.

i. $\cos 240^0$

[4 marks]
[*4 markah*]

ii. $\tan (-45^0)$

[3 marks]
[*3 markah*]

iii. $3 \tan 300^0$

[4 marks]
[*4 markah*]

iv. $\text{cosec } 30^0$

[4 marks]
[*4 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. Sketch the following angles :

Lakarkan sudut yang berikut :

a. Adjacent Angle

Sudut Bersebelahan

[2 marks]

[*2 markah*]

b. Complementary Angle

Sudut Pelengkap

[2 marks]

[*2 markah*]

c. Supplementary Angle

Sudut Tambahan

[2 marks]

[*2 markah*]

ii. From the diagram 4a(ii), LM and NO are straight lines. Calculate the value of x + y + z.

Daripada Rajah 4a(ii), LM dan NO adalah garis-garis lurus. Kirakan nilai x + y + z.

[4 marks]

[*4 markah*]

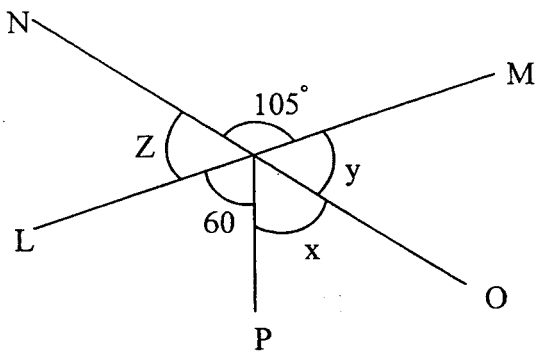


Diagram 4a(ii) /*Rajah 4a(ii)*

CLO1
C3

b) i.

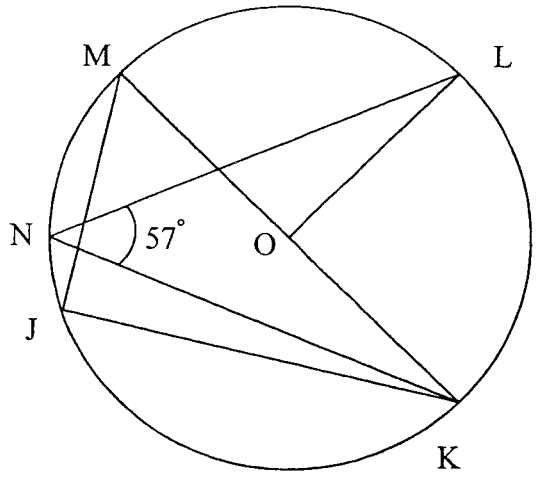


Diagram 4b(i) / *Rajah 4b(i)*

From the Diagram 4b(i), O is the center of the circle. KM is a diameter of the circle, LN = KN and $\angle$LNK = $\angle$JMK = 57°. Calculate:

Daripada Rajah 4b(i), O ialah pusat bulatan. KM adalah diameter bulatan, LN = KN dan $\angle LNK = \angle JMK = 57^\circ$. Kirakan:

a. $\angle$LOM

[2 marks]
[*2 markah*]

b. $\angle$JKN

[6 marks]
[*6 markah*]

ii. Calculate the angle of x and y in each of the diagrams below.

Kirakan sudut x dan y untuk setiap rajah berikut.

a.

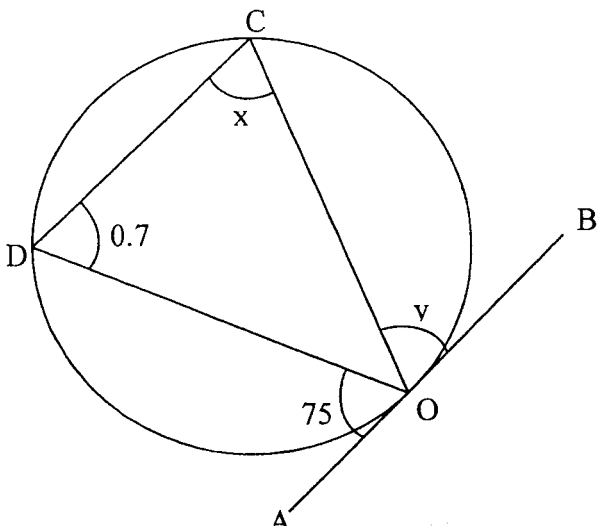


Diagram 4b(ii)(a) / *Rajah 4b(ii)(a)*

[4 marks]

[*4 markah*]

b.

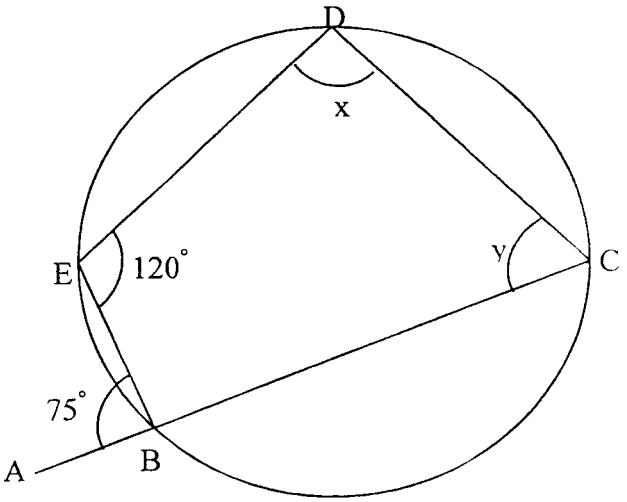


Diagram 4b(ii)(b) / *Rajah 4b(ii)(b)*

[3 marks]

[*3 markah*]

QUESTION 5

SOALAN 5

CLO1 C2

a)

i. Based on Diagram 5a(i), calculate the length of FC.

Berdasarkan Rajah 5a(i), kirakan panjang FC.

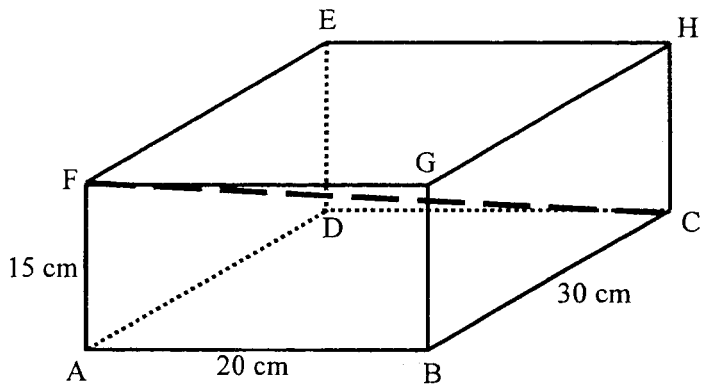


Diagram 5a(i) / *Rajah 5a(i)*

[4 marks]

[*4 markah*]

ii. Calculate the length of XY for pyramids below:

Kirakan panjang XY bagi piramid dibawah:

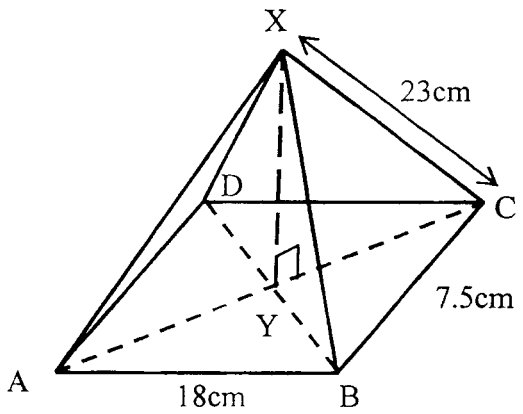


Diagram 5a(ii) / *Rajah 5a(ii)*

[6 marks]

[*6 markah*]

CLO1
C3

b)

i. The shape WXYZO, as shown in Diagram 5b(i), consists of a sector WOX with a circle center O, which joined to a sector YOZ with center O. Given that arc length WX = 5cm, $\angle$ WOX = 0.6rad and WOZ is a straight line of length 15 cm.

Bentuk WXYZO, seperti yang ditunjukkan di Rajah 5b(i), terdiri daripada sektor WOX berpusat di titik O yang bergabung dengan sektor YOZ, juga berpusat di O. Diberikan panjang lengkok WX = 5cm, $\angle$ WOX = 0.6rad dan WOZ adalah garisan lurus panjang 15cm.

a. Calculate the length of OW.
Kirakan panjang OW.

[2 marks]
[*2 markah*]

b. Calculate the area of the shaded sector YOZ.
Kirakan luas sektor berlorek YOZ.

[3 marks]
[*3 markah*]

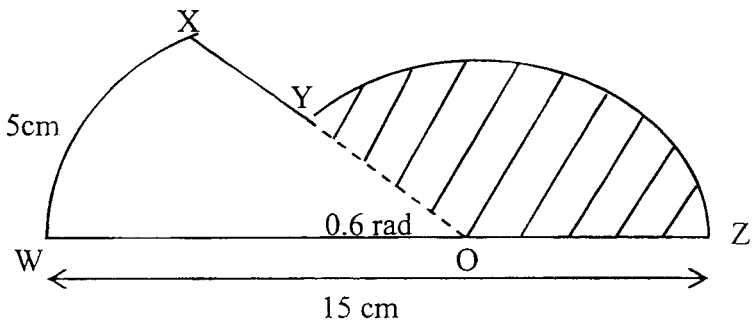


Diagram 5b(i) / *Rajah 5b(i)*

ii.

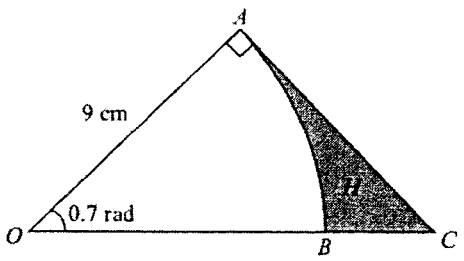


Diagram 5b(ii) / *Rajah 5b(ii)*

Diagram 5b(ii) shows a sector OAB of a circle with center O and radius 9cm. The angle BOA is 0.7rad and the length OA is 9cm. Calculate:

Rajah 5b(ii) menunjukkan sektor OAB sebuah bulatan dengan pusat O dan jejari 9cm. Sudut BOA adalah 0.7rad dan panjang OA adalah 9cm. Kirakan:

a. The length of arc AB.
Panjang lengkuk AB.

[2 marks]
[*2 markah*]

b. The area of sector OAB.
Luas sektor OAB.

[2 marks]
[*2 markah*]

c. The length of AC.
Panjang AC.

[3 marks]
[*3 markah*]

d. The area of H. [Give your answer to 2 decimal places]
Luas H. [Beri jawapan anda kepada 2 tempat perpuluhan]

[3 marks]
[*3 markah*]

SOALAN TAMAT

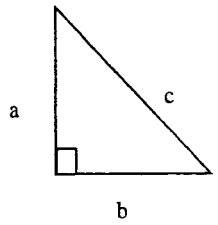
FORMULA SHEET FOR DBM1032 : MATHEMATICS

SOLVING QUADRATIC EQUATION

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

TRIGONOMETRY

Pythagoras' Theorem



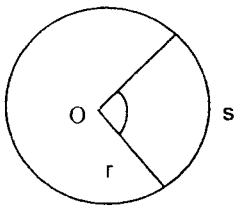
$$c^2 = a^2 + b^2$$

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

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

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

SURFACE AREA AND VOLUME

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

$V = \pi r^2 h$

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

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

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

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

Pyramid : A = area of four triangles + area of base

V = (1/3) x (area of base) x (height)

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

$V = lwh$