

SULIT



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

JABATAN MATEMATIK, SAINS & KOMPUTER

PEPERIKSAAN AKHIR

SESI JUN 2018

DBM1042: MATHEMATICS

TARIKH : 31 OKTOBER 2018

MASA : 11.15 PAGI - 1.15 TENGAHARI (2 JAM)

Kertas ini mengandungi **SEBELAS (11)** halaman bercetak.

Bahagian A: Struktur (3 soalan)

Bahagian B: Struktur (3 soalan)

Dokumen sokongan yang disertakan : Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 50 MARKS

BAHAGIAN A : 50 MARKAH

INSTRUCTION:

This section consists of **THREE (3)** structured questions. Answer **TWO (2)** questions only.

ARAHAN:

Bahagian ini mengandungi **TIGA (3)** soalan berstruktur. Jawab **DUA (2)** soalan sahaja.

QUESTION 1

SOALAN 1

CLO1
C2

(a) Simplify the following algebraic fractions:

Permudahkan pecahan algebra berikut:

i. $\frac{8x^3y^4}{2x^2y}$

[3 marks]

[3 markah]

ii. $\frac{5}{2y-3} - \frac{1}{y+2}$

[3 marks]

[3 markah]

iii. $\frac{2x+6y}{p-q} + \frac{x+3y}{p^2-q^2}$

[4 marks]

[4 markah]

CLO1
C3

(b) Solve the following equations:

*Selesaikan persamaan yang berikut:*i. Given $3mx=4p+2x$, express x in the term of p and m .*Diberi $3mx=4p+2x$, nyatakan x di dalam sebutan p dan m .*

[3 marks]

[3 markah]

ii. Given $x = \frac{mN+y}{N}$, express N in the term of x , y and m .*Diberi $x = \frac{mN+y}{N}$, nyatakan N di dalam sebutan x , y dan m .*

[3 marks]

[3 markah]

iii. Solve the following equation by using Factorization Method:

*Selesaikan persamaan yang berikut dengan menggunakan Kaedah**Pemfaktoran:*

$$7y^2 - 42 = -35y$$

[4 marks]

[4 markah]

iv. Solve the following equation by using Quadratic Formula:

*Selesaikan persamaan yang berikut dengan menggunakan Formula**Kuadratik:*

$$2y^2 + y - 3 = 0$$

[5 marks]

[5 markah]

QUESTION 2

SOALAN 2

CLO1
C2

- (a) Figure 2(a) shows a combination of a trapezium and a triangle. Find the value of:

Rajah 2(a) menunjukkan gabungan trapezium dan segitiga. Cari nilai bagi:

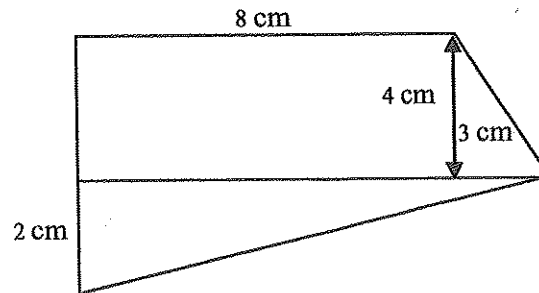


Figure 2(a) / *Rajah 2(a)*

- i. The Area of combination shape.

Luas bagi bentuk gabungan.

[5 marks]

[5 markah]

- ii. The perimeter of combination shape.

Perimeter bagi bentuk gabungan.

[5 marks]

[5 markah]

CLO 1
C3

- (b) Figure 2(b) shows a right cylinder filled with full of water. The height of cylinder is 15 cm and its diameter is 10 cm. All volume of water from the cylinder were discharged into the cone container. Afterwards all volume of water from the cone were discharge into the cuboid container. Calculate :

Rajah 2(b) menunjukkan sebuah silinder tegak diisi penuh dengan air. Tinggi silinder ialah 15cm dan diameternya ialah 10cm. Semua air dalam bekas silinder itu dituangkan ke dalam sebuah bekas berbentuk kon. Kemudian semua air dalam bekas kon dituangkan ke dalam sebuah bekas berbentuk kuboid. Hitungkan:

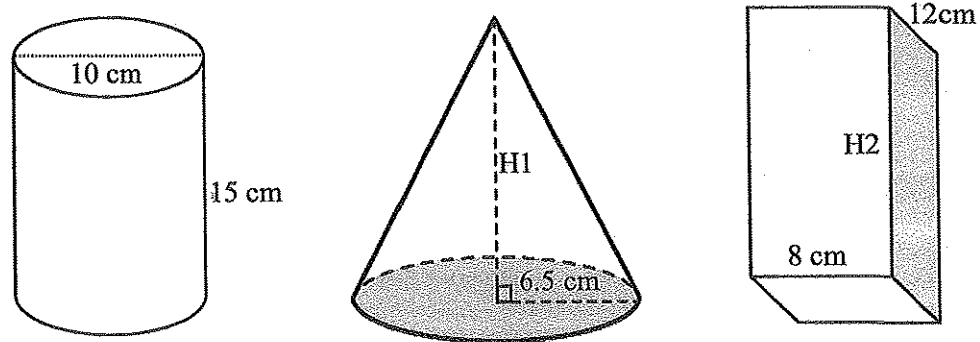


Figure 2(b) / Rajah 2(b)

- i. The height, H_1 of the water level in cone container.

Tinggi, H_1 aras air dalam bekas kon.

[8 marks]

[8 markah]

- ii. The height, H_2 of the water level in cuboid container.

Tinggi, H_2 aras air dalam bekas kuboid.

[7 marks]

[7 markah]

QUESTION 3

SOALAN 3

CLO1
C3

- (a) Find the value of the trigonometric function in each of the following by using reference angle:

Cari nilai bagi fungsi trigonometri setiap yang berikut dengan menggunakan sudut rujukan:

i. $\tan(95^\circ)$ [3 marks]
[3 markah]

ii. $\cos(240^\circ)$ [3 marks]
[3 markah]

iii. $\sin(-175^\circ)$ [3 marks]
[3 markah]

iv. $\cos\left(\frac{1}{6}\pi \text{ rad}\right)$ [4 marks]
[4 markah]

v. $\sin(7\pi \text{ rad})$ [4 marks]
[4 markah]

vi. $\tan\left(-\frac{5}{3}\pi \text{ rad}\right)$ [4 marks]
[4 markah]

vii. $\sec(-190^\circ)$ [4 marks]
[4 markah]

SECTION B: 50 MARKS

BAHAGIAN B: 50 MARKAH

INSTRUCTION:

This section consists of **THREE (3)** structured questions. Answer **TWO (2)** questions only.

ARAHAN:

Bahagian ini mengandungi **TIGA (3)** soalan struktur. Jawab **DUA (2)** soalan sahaja.

QUESTION 4

SOALAN 4

CLO2
C2

(a) Determine the following integrals :

Tentukan kamiran-kamiran yang berikut:

i. $\int (8x^3 - 3x^2 + 7x - 5) dx$

[4 marks]
[4 markah]

ii. $\int (2x + 4)(5 - x) dx$

[4 marks]
[4 markah]

iii. $\int \frac{24}{(-x - 7)^5} dx$

[5 marks]
[5 markah]

iv. $\int_{-1}^1 (2 - 3x)^2 dx$

[6 marks]
[6 markah]

v. $\int_1^3 \left(\frac{x^3 - 4}{x^2} \right) dx$

[6 marks]
[6 markah]

QUESTION 5

SOALAN 5

CLO2
C2

- (a) Find the value of
- x
- in the
- Figure 5(a)**
- if
- ABC
- is a straight line.

*Dapatkan nilai x pada **Rajah 5(a)** jika ABC adalah garis lurus.*

[4 marks]

[4 markah]

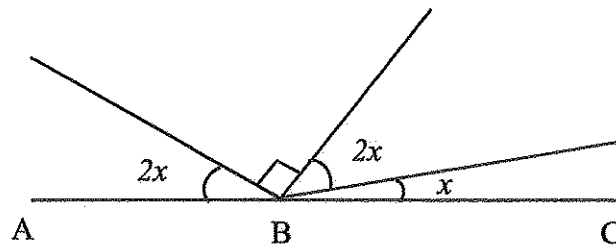
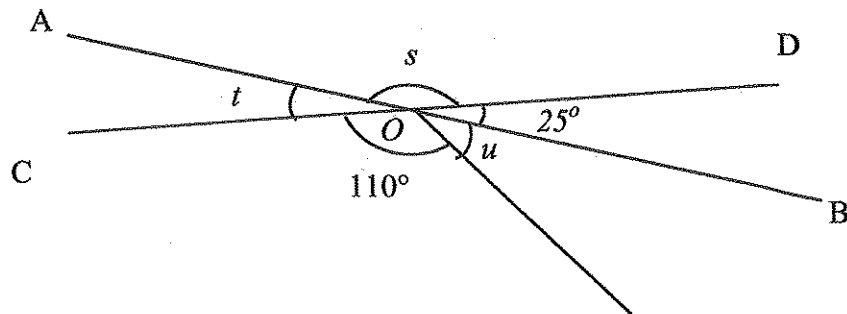


Figure 5(a) / Rajah 5 (a)

CLO2
C3

(b)

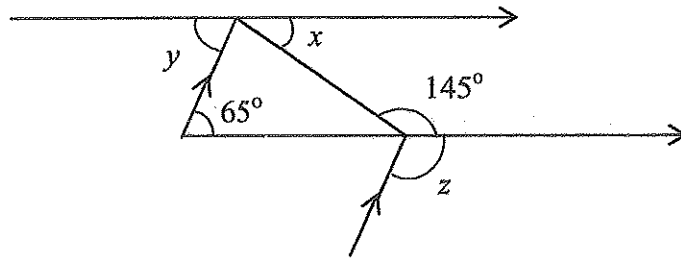
- i. a. Calculate the value of angle
- s
- ,
- t
- ,
- u
- .

Kirakan nilai sudut s , t , u .

[5 marks]

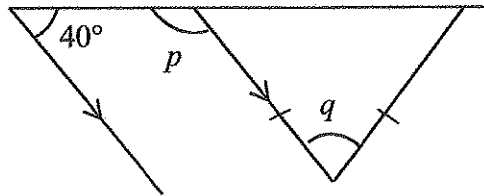
[5 markah]

- b. Calculate the value of angle x , y and z .
Kirakan nilai sudut x , y , dan z



[5 marks]
 [5 markah]

- c. Calculate the value of angle p and q .
Kirakan nilai sudut p dan q .



[4 marks]
 [4 markah]

CLO2
 C3

- ii. In Figure 5(b)(ii), O is the centre of the circle. Calculate the value of angle a , b and c .

In Figure 5(b)(ii), O ialah pusat bagi bulatan. Kirakan nilai sudut bagi a , b dan c .

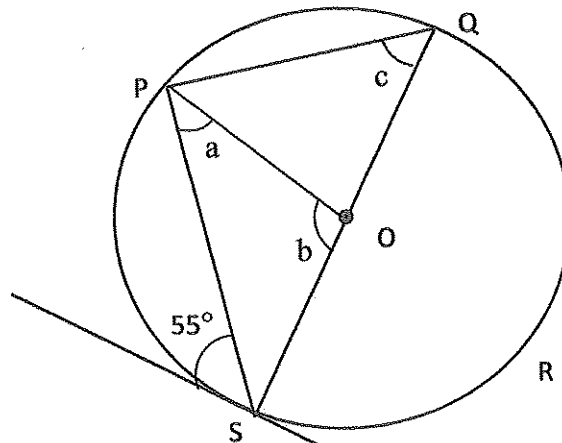


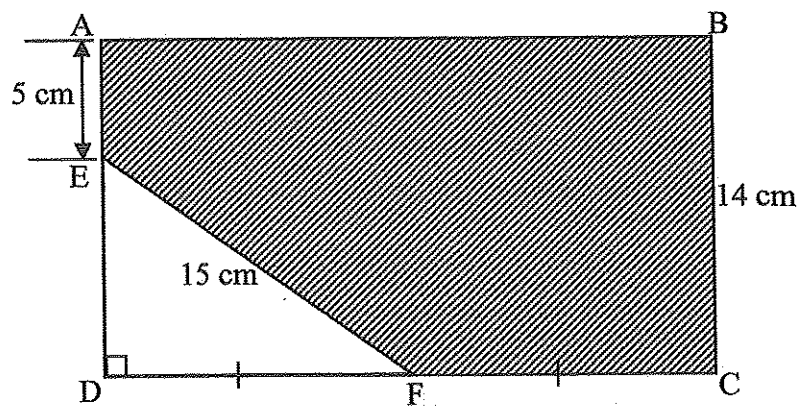
Figure 5(b)(ii) / Rajah 5(b)(ii)

[7 markah]
 [7 markah]

QUESTION 6
SOALAN 6CLO2
C2

- (a) **Figure 6(a)** shows a rectangle ABCD and a right-angled triangle DEF. Given $AE=5\text{cm}$, $EF=15\text{cm}$, $BC=14\text{cm}$ and $DF=FC$. Find the perimeter of the shaded region.

Rajah 6(a) menunjukkan sebuah segiempat tepat ABCD dan sebuah segitiga sudut tegak DEF. Diberi $AE=5\text{cm}$, $EF=15\text{cm}$, $BC=14\text{cm}$ dan $DF=FC$. Dapatkan perimeter kawasan berlerek.

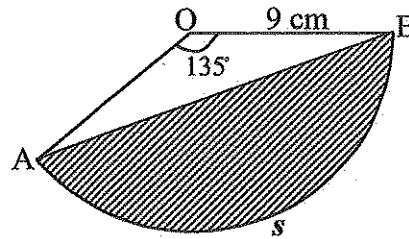
**Figure 6(a) / Rajah 6(a)**

[10 marks]

[10 markah]

CLO2
C3

(b) Figure 6(b) is a sector with center O. Calculate:

Rajah 6(b) adalah sebuah sektor dengan pusat O. Hitungkan:Figure 6(b) / *Rajah 6(b)*

i. Angle AOB in radian.

Sudut AOB dalam radian.

[2 marks]

[2 markah]

ii. The length of arc AB.

Panjang lengkok AB.

[2 marks]

[2 markah]

iii. The area of shaded segment.

Luas rantau berlorek.

[11 marks]

[11 markah]

SOALAN TAMAT

FORMULA SHEET FOR DBM1042 : MATHEMATICSSOLVING QUADRATIC EQUATION

$$ax^2 - bx + c = 0$$

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

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:

$A =$ Area of four triangles + area of base

$$V = \frac{1}{3} \times \text{Area of base} \times \text{height}$$

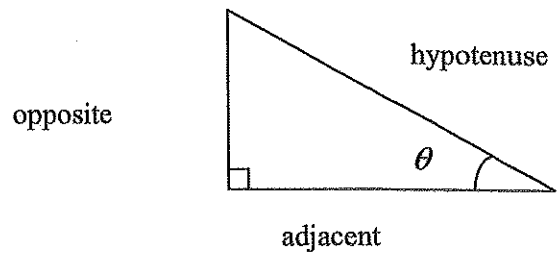
Prism

$A =$ Area of 3 rectangular faces +
area of 2 trigular faces

$$V = \text{Area triangle} \times \text{length}$$

Area Triangle

$$\text{Area of triangle} = \frac{1}{2}bh$$

TRIGONOMETRY

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

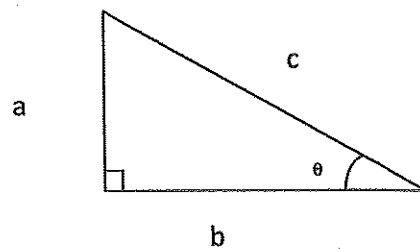
$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

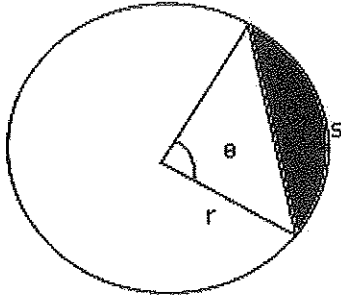
$$\operatorname{cosec} \theta = \frac{1}{\sin \theta}$$

$$\cot \theta = \frac{1}{\tan \theta}$$

$$\sec \theta = \frac{1}{\cos \theta}$$



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

GEOMETRY

Arc length, $S = r\theta$

Area of a sector, $A = \frac{1}{2}r^2\theta$

Area of triangle, $A = \frac{1}{2}r^2 \sin \theta$

Area of segment, $A = \frac{1}{2}r^2\theta - \frac{1}{2}r^2 \sin \theta$

INTEGRATIONINDEFINITE INTEGRAL

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$\int ax^n dx = \frac{ax^{n+1}}{n+1} + C, n \neq -1$$

$$\int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{a(n+1)} + C, n \neq -1$$

DEFINITE INTEGRAL

$$\int_a^b f(x) dx = [F(x)]_a^b = F(b) - F(a)$$

AREA UNDER A CURVE

Along x-axis

$$A = \int_a^b y dx$$

Along y-axis

$$A = \int_c^d x dy$$

VOLUME OF SOLID OF REVOLUTION

Along x-axis

$$V = \int_a^b \pi y^2 dx$$

Along y-axis

$$V = \int_c^d \pi x^2 dy$$