

# Penyelesaian Lengkap

## Ujian Akhir Sesi Akademik

### Bahagian A

1  $0.4, 1.0, 1.6, 2.2, \dots$

$$\begin{array}{ccc} \curvearrowright & \curvearrowright & \curvearrowright \\ +0.6 & +0.6 & +0.6 \end{array}$$

Jawapan/Answer: C

2  $72, 65, 58, x, 44, \dots$

$$\begin{array}{cccc} \curvearrowright & \curvearrowright & \curvearrowright & \curvearrowright \\ -7 & -7 & -7 & -7 \end{array}$$

$$\begin{aligned} x &= 58 - 7 \\ &= 51 \end{aligned}$$

Jawapan/Answer: B

$3y$	$\rightarrow -2$	$2y$
$-y$	$\rightarrow +5$	$15y$
$-3y^2$	$-10$	$17y$

$$(3y - 2)(5 - y)$$

Jawapan/Answer: A

$$\begin{aligned} 4 \quad \frac{3x}{5} - \frac{2y}{3m} &= \frac{3x(3m)}{5(3m)} - \frac{2y(5)}{3m(5)} \\ &= \frac{9mx - 10y}{15m} \end{aligned}$$

Jawapan/Answer: D

5  $2m = \frac{7}{n} - 5p$

$$2mn = 7 - 5pn$$

$$2mn + 5pn = 7$$

$$n(2m + 5p) = 7$$

$$n = \frac{7}{2m + 5p}$$

Jawapan/Answer: A

6  $120^\circ + 108^\circ + x = 360^\circ$

$$x + 228^\circ = 360^\circ$$

$$x = 360^\circ - 228^\circ$$

$$x = 132^\circ$$

Jawapan/Answer: B

7  $2x + 105^\circ + 85^\circ + 2x + 110^\circ = 540^\circ$

$$4x + 300^\circ = 540^\circ$$

$$4x = 540^\circ - 300^\circ$$

$$4x = 240^\circ$$

$$x = 60^\circ$$

Jawapan/Answer: C

8  $2\pi r = 66$

$$2 \times \frac{22}{7} \times r = 66$$

$$\frac{44}{7} r = 66$$

$$r = 66 \times \frac{7}{44}$$

$$= 10.5 \text{ cm}$$

$$\text{Diameter} = 2 \times 10.5 \text{ cm}$$

$$= 21 \text{ cm}$$

Jawapan/Answer: D

9  $\frac{x}{360^\circ} \times \frac{22}{7} \times 16^2 = 281.6$

$$\frac{5 \ 632x}{2 \ 520^\circ} = 281.6$$

$$x = \frac{281.6 \times 2 \ 520}{2 \ 520}$$

$$= 126^\circ$$

Jawapan/Answer: C

10 Kon/Cone

Jawapan/Answer: A

11 Perimeter = 112

$$14 \times x = 112$$

$$x = 8 \text{ cm}$$

Isi padu/Volume =  $8 \times 8 \times 8$

$$= 512 \text{ cm}^3$$

Jawapan/Answer: B

12 Jarak/Distance =  $10 - (-3)$

$$= 13 \text{ unit/units}$$

Jawapan/Answer: D

13  $2 \times 4 = 8$

$$7 \times 4 = 28$$

$$9 \times 4 = 36$$

$$a = 9$$

Jawapan/Answer: B

14 Laju purata =  $\frac{15 \text{ km}}{\frac{12}{60} \text{ j}}$

$$= 15 \div \frac{1}{5}$$

$$= 15 \times 5$$

$$= 75 \text{ km/j}$$

$$\text{Average speed} = \frac{15 \text{ km}}{\frac{12}{60} \text{ h}}$$

$$= 15 \div \frac{1}{5}$$

$$= 15 \times 5$$

$$= 75 \text{ km/h}$$

Jawapan/Answer: C

15 Pecutan/Acceleration =  $\frac{(0 - 25) \text{ m/s}}{10 \text{ s}}$

$$= -2.5 \text{ m/s}^2$$

Nyahpecutan/Deceleration =  $2.5 \text{ m/s}^2$

Jawapan/Answer: D

$$16 \text{ Kecerunan/Gradient} = -\frac{-2}{-4}$$

$$= -\frac{1}{2}$$

Jawapan/Answer: B

17 Imej = Objek + Translasi  
Image = Object + Translation

$$\begin{pmatrix} -2 \\ 3 \end{pmatrix} = A + \begin{pmatrix} 2 \\ -5 \end{pmatrix}$$

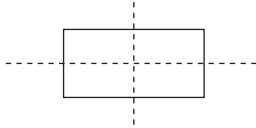
$$A = \begin{pmatrix} -2 \\ 3 \end{pmatrix} - \begin{pmatrix} 2 \\ -5 \end{pmatrix}$$

$$A = \begin{pmatrix} -4 \\ 8 \end{pmatrix}$$

Titik A/Point A = (-4, 8)

Jawapan/Answer: A

18 Suatu objek mempunyai simetri putaran jika objek itu mempunyai sekurang-kurangnya dua paksi simetri.  
An object has rotational symmetry if it has at least two axes of symmetry.



Jawapan/Answer: C

19 2, 2, 2, 4, 4, 4, 4, 6, 6, 6, 6, 8, 8

$$\text{Median} = \frac{\text{RM4} + \text{RM6}}{2}$$

$$= \text{RM5}$$

Jawapan/Answer: B

$$20 P(\text{Ganjil}) = \frac{2}{7}$$

$$P(\text{Odd}) = \frac{2}{7}$$

$$\frac{\text{Bilangan kad nombor ganjil}}{\text{Jumlah bilangan kad}} = \frac{2}{7}$$

$$\frac{\text{Number of odd number cards}}{\text{Total cards}} = \frac{2}{7}$$

$$\frac{16}{16+x} = \frac{2}{7}$$

$$2(16+x) = 7 \times 16$$

$$16+x = 56$$

$$x = 56 - 16$$

$$= 40$$

Jawapan/Answer: D

### Bahagian B

1 (a)

17, 25, 33, 41, ...

69, 60, 51, 42, ...

$$78 - 9n, n = 1, 2, 3, \dots$$

$$15 + 2n, n = 1, 2, 3, \dots$$

$$9 + 8n, n = 1, 2, 3, \dots$$

(b) (i)  $100 - 16m^2 = 4(25 - 4m^2)$   
 $= 4[5^2 - (2m)^2]$   
 $= 4(5 + 2m)(5 - 2m)$  [X]

(ii)  $49xy - 7xz + 28py - 4pz = 7x(7y - z) + 4p(7y - z)$   
 $= (7x + 4p)(7y - z)$  [✓]

2 (a) Oktagon: Sudut pedalaman

Octagon: Interior angle

$$= \frac{[2(8) - 4] \times 90^\circ}{8}$$

$$= 135^\circ$$

Nonagon: Sudut pedalaman/Interior angle

$$= \frac{[2(9) - 4] \times 90^\circ}{9}$$

$$= 140^\circ$$

(b) (i) Hasil tambah sudut pedalaman

Sum of interior angles

$$= (7 - 2) \times 180^\circ$$

$$= 900^\circ$$

(ii)  $360^\circ$

3 (a) (i) Silinder/Cylinder

(ii) Prisma/Prism

(b) (i)  $RS = \sqrt{(-2 - 6)^2 + (-23 + 8)^2}$

$$= \sqrt{(-8)^2 + (-15)^2}$$

$$= \sqrt{64 + 225}$$

$$= \sqrt{289}$$

$$= 17 \text{ unit/units}$$

BENAR/TRUE

(ii) Titik tengah/Midpoint =  $\left(\frac{-5-1}{2}, \frac{8+4}{2}\right)$

$$= \left(-\frac{6}{2}, \frac{12}{2}\right)$$

$$= (-3, 6)$$

PALSU/FALSE

4 (a) (i) Satu kepada banyak/One-to-many

(ii) Banyak kepada banyak/Many-to-many

(b) (i) ✓ (ii) ✓

5 (a) (i) Translasi/Translation

(ii) Putaran/Rotation

(b) (i) Kekерapan bagi 9 adalah tertinggi.

Frequency for 9 is the highest. [✓]

(ii) Kekерapan bagi gred B bukan tertinggi.

Frequency for grade B is not the highest. [X]

### Bahagian C

1 (a) (i)  $-6m(p - 5) = -6mp + 30m$

(ii)  $(4x - 5y)(x + 3y) = 4x^2 + 12xy - 5xy - 15y^2$   
 $= 4x^2 + 7xy - 15y^2$

(b) (i)  $99 = 112 - 13(1)$

$$86 = 112 - 13(2)$$

$$73 = 112 - 13(3)$$

$$60 = 112 - 13(4)$$

Ungkapan algebra/Algebraic expression

$$= 112 - 13n, n = 1, 2, 3, \dots$$

(ii)  $112 - 13n < 0$

$$13n > 112$$

$$n > \frac{112}{13}$$

$$n > 8.615$$

$$n = 9$$

Sebutan negatif pertama/First negative term

$$= 112 - 13(9)$$

$$= 112 - 117$$

$$= -5$$

$$\begin{aligned}
 \text{(c)} \quad \frac{7}{8m} - \frac{10-9n}{24m} &= \frac{7(3)}{8m(3)} - \frac{10-9n}{24m} \\
 &= \frac{21 - (10-9n)}{24m} \\
 &= \frac{21 - 10 + 9n}{24m} \\
 &= \frac{11 + 9n}{24m}
 \end{aligned}$$

$$2 \text{ (a) (i) } A = (8x \times 3y) - \left(\frac{1}{2} \times 4x \times 6\right)$$

$$= 24xy - 12x$$

$$\text{(ii) } A = (24 \times 4 \times 7)(12 \times 4)$$

$$= 672 - 48$$

$$= 624$$

$$\text{(b) (i) } x = 120^\circ$$

$$\text{(ii) } \angle PRQ + 42^\circ + 42^\circ = 180^\circ$$

$$\angle PRQ = 180^\circ - 84^\circ$$

$$= 96^\circ$$

$$y + 96^\circ + 120^\circ = 360^\circ$$

$$y = 360^\circ - 216^\circ$$

$$= 144^\circ$$

Bilangan sisi/Number of sides

$$= \frac{360^\circ}{180^\circ - 144^\circ}$$

$$= \frac{360^\circ}{36^\circ}$$

$$= 10$$

$$\text{(c) } AB = 6 - (-2)$$

$$= 8 \text{ unit/units}$$

$$\text{(i) Perimeter} = 4 \times 8$$

$$= 32 \text{ unit/units}$$

$$\text{(ii) Luas/Area} = 8 \times 8$$

$$= 64 \text{ unit}^2/\text{units}^2$$

$$3 \text{ (a) (i) Perentas/Chord}$$

$$\text{(ii) Diameter}$$

$$\text{(iii) Tembereng/Segment}$$

$$\text{(b) (i) Panjang lengkok/Length of arc}$$

$$= \frac{252}{360} \times 2 \times \frac{22}{7} \times 10.5$$

$$= 4.62 \text{ cm}$$

$$\text{(ii) Luas kawasan berlorek/Area of shaded region}$$

$$= \frac{252}{360} \times \frac{22}{7} \times 10.5^2$$

$$= 242.55 \text{ cm}^2$$

$$\text{(c) Luas permukaan/Surface area}$$

$$= (10 \times 10) + 4 \left(\frac{1}{2} \times 10 \times 13\right)$$

$$= 100 + 260$$

$$= 360 \text{ cm}^2$$

$$4 \text{ (a) Lilitan/Circumference} = 44$$

$$2 \times \frac{22}{7} \times r = 44$$

$$\frac{44}{7} r = 44$$

$$r = 44 \times \frac{7}{44}$$

$$= 7 \text{ cm}$$

$$\text{Isi padu/Volume} = \frac{22}{7} \times 7^2 \times 19$$

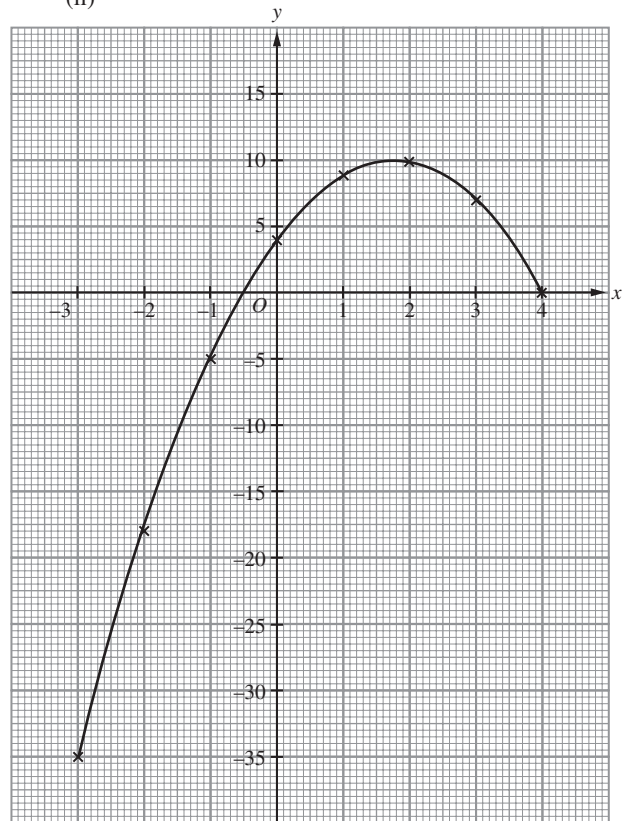
$$= 2926 \text{ cm}^3$$

$$\text{(b) (i) } x = 2, y = -2(4) + 7(2) + 4$$

$$= -8 + 14 + 4$$

$$= 10$$

(ii)



$$\text{(c) (i) Jarak} = (80 \times 1 \text{ jam } 30 \text{ minit}) \text{ km}$$

$$\text{Distance} = (80 \times 1 \text{ hour } 30 \text{ minutes}) \text{ km}$$

$$= 80 \times 1 \frac{1}{2}$$

$$= 80 \times 1.5$$

$$= 120 \text{ km}$$

$$\text{(ii) Masa} = \frac{\text{Jarak}}{\text{Laju}}$$

$$= \frac{120 \text{ km}}{72 \text{ km/j}}$$

$$= \frac{5}{3} \text{ jam}$$

$$= 1 \frac{2}{3} \text{ jam}$$

$$= 1 \text{ jam} + \frac{2}{3} \times 60 \text{ minit}$$

$$= 1 \text{ jam } 40 \text{ minit}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$= \frac{120 \text{ km}}{72 \text{ km/h}}$$

$$= \frac{5}{3} \text{ hours}$$

$$= 1 \frac{2}{3} \text{ hours}$$

$$= 1 \text{ hour} + \frac{2}{3} \times 60 \text{ minutes}$$

$$= 1 \text{ hour } 40 \text{ minutes}$$

5 (a) Kecerunan/*Gradient* =  $-\frac{4}{3}$

$$\frac{9-1}{x-2} = -\frac{4}{3}$$

$$\frac{8}{x-2} = -\frac{4}{3}$$

$$24 = -4(x-2)$$

$$24 = -4x + 8$$

$$4x = 8 - 24$$

$$4x = -16$$

$$x = -4$$

(b) (i) 11 – 15

(ii)

Masa Time	Kekerapan Frequency (f)	Titik tengah Midpoint (x)	f × x
1 – 5	3	3	9
6 – 10	7	8	56
11 – 15	13	13	169
16 – 20	9	18	162
21 – 25	8	23	184
	<b>40</b>		<b>580</b>

$$\text{Min} = \frac{580}{40}$$

$$= 14.5 \text{ jam}$$

$$\text{Mean} = \frac{580}{40}$$

$$= 14.5 \text{ hours}$$

(c) (i) Pantulan pada garis *PR*  
*Reflection in the line PR*

(ii) Luas *PQRS*/*Area of PQRS* =  $2\left(\frac{1}{2} \times 5 \times 12\right)$   
= 60 cm<sup>2</sup>

6 (a) Jumlah bilangan guli/*Total number of marbles* = *x*

$$P(\text{Kuning/Yellow}) = \frac{1}{8}$$

$$\frac{5}{x} = \frac{1}{8}$$

$$x = 5 \times 8$$

$$= 40$$

$$P(\text{Bukan putih/Not white}) = \frac{40-7}{40}$$

$$= \frac{33}{40}$$

(b) (i) Putaran 90° lawan arah jam pada pusat A(4, 7).  
*Anticlockwise rotation of 90° at point A(4, 7).*

(ii) (8, 9)

(c)  $P(\text{Epal masih elok/Apple in good condition}) + \frac{1}{8}$

$$= 1$$

$$P(\text{Epal masih elok/Apple in good condition})$$

$$= 1 - \frac{1}{8}$$

$$= \frac{7}{8}$$

$$\frac{x}{120} = \frac{7}{8}$$

$$x = \frac{7}{8} \times 120$$

$$= 105$$

Bilangan epal yang masih elok = 105

*Number of apples in good condition* = 105