

Name : .....



Form : .....

## MODUL PENINGKATAN PRESTASI TINGKATAN 5

TAHUN 2014

MAJLIS PENGETUA SEKOLAH MALAYSIA (KEDAH)

ADDITIONAL MATHEMATICS ( MODULE 2 )

Kertas 1

Ogos 2014

2 jam

Dua jam

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Tulis nama dan tingkatan anda pada ruangan yang disediakan.*
2. *Kertas soalan ini adalah dalam dwibahasa.*
3. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

<i>Untuk Kegunaan Pemeriksa</i>		
Soalan	Markah Penuh	Markah Diperolehi
1	3	
2	3	
3	4	
4	3	
5	3	
6	3	
7	3	
8	3	
9	4	
10	4	
11	2	
12	4	
13	3	
14	2	
15	3	
16	4	
17	4	
18	4	
19	3	
20	3	
21	3	
22	3	
23	3	
24	3	
25	3	
<b>TOTAL</b>	<b>80</b>	

Kertas soalan ini mengandungi **22** halaman bercetak dan **2** halaman kosong.

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used.

**ALGEBRA**

$$1 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$2 \quad a^m \times a^n = a^{m+n}$$

$$3 \quad a^m \div a^n = a^{m-n}$$

$$4 \quad (a^m)^n = a^{mn}$$

$$5 \quad \log_a mn = \log_a m + \log_a n$$

$$6 \quad \log_a \frac{m}{n} = \log_a m - \log_a n$$

$$7 \quad \log_a m^n = n \log_a m$$

$$8 \quad \log_a b = \frac{\log_c b}{\log_c a}$$

$$9 \quad T_n = a + (n-1)d$$

$$10 \quad S_n = \frac{n}{2}[2a + (n-1)d]$$

$$11 \quad T_n = ar^{n-1}$$

$$12 \quad S_n = \frac{a(r^n - 1)}{r - 1} = \frac{a(1 - r^n)}{1 - r}, \quad (r \neq 1)$$

$$13 \quad S_\infty = \frac{a}{1 - r}, \quad |r| < 1$$

**CALCULUS**

$$1 \quad y = uv, \quad \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$2 \quad y = \frac{u}{v}, \quad \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2},$$

$$3 \quad \frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$$

4 Area under a curve

$$= \int_a^b y \, dx \quad \text{or}$$

$$= \int_a^b x \, dy$$

5 Volume generated

$$= \int_a^b \pi y^2 \, dx \quad \text{or}$$

$$= \int_a^b \pi x^2 \, dy$$

**GEOMETRY**

$$1 \quad \text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

2 Midpoint

$$(x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$3 \quad |\vec{r}| = \sqrt{x^2 + y^2}$$

$$4 \quad \hat{\vec{r}} = \frac{x\vec{i} + y\vec{j}}{\sqrt{x^2 + y^2}}$$

5 A point dividing a segment of a line

$$(x, y) = \left( \frac{nx_1 + mx_2}{m+n}, \frac{ny_1 + my_2}{m+n} \right)$$

6 Area of triangle

$$= \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$$

## STATISTICS

$$1 \quad \bar{x} = \frac{\sum x}{N}$$

$$2 \quad \bar{x} = \frac{\sum fx}{\sum f}$$

$$3 \quad \sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}} = \sqrt{\frac{\sum x^2}{N} - \bar{x}^2}$$

$$4 \quad \sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} = \sqrt{\frac{\sum f x^2}{\sum f} - \bar{x}^2}$$

$$5 \quad m = L + \left[ \frac{\frac{1}{2}N - F}{f_m} \right] C$$

$$6 \quad I = \frac{Q_1}{Q_0} \times 100$$

$$7 \quad \bar{I} = \frac{\sum W_i I_i}{\sum W_i}$$

$$8 \quad {}^n P_r = \frac{n!}{(n-r)!}$$

$$9 \quad {}^n C_r = \frac{n!}{(n-r)!r!}$$

$$10 \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$11 \quad P(X = r) = {}^n C_r p^r q^{n-r}, \quad p + q = 1$$

$$12 \quad \text{Mean } \mu = np$$

$$13 \quad \sigma = \sqrt{npq}$$

$$14 \quad Z = \frac{X - \mu}{\sigma}$$

## TRIGONOMETRY

$$1 \quad \text{Arc length, } s = r\theta$$

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

$$3 \quad \sin^2 A + \cos^2 A = 1$$

$$4 \quad \sec^2 A = 1 + \tan^2 A$$

$$5 \quad \operatorname{cosec}^2 A = 1 + \cot^2 A$$

$$6 \quad \sin 2A = 2 \sin A \cos A$$

$$7 \quad \begin{aligned} \cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \end{aligned}$$

$$8 \quad \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$9 \quad \sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

$$10 \quad \cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

$$11 \quad \tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

$$12 \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$13 \quad a^2 = b^2 + c^2 - 2bc \cos A$$

$$14 \quad \text{Area of triangle} = \frac{1}{2}ab \sin C$$

Answer **all** questions.  
*Jawab semua soalan.*

- 1 Diagram 1 shows the relation between set  $H$  and set  $K$ .  
*Rajah 1 menunjukkan hubungan antara set  $H$  dan set  $K$ .*

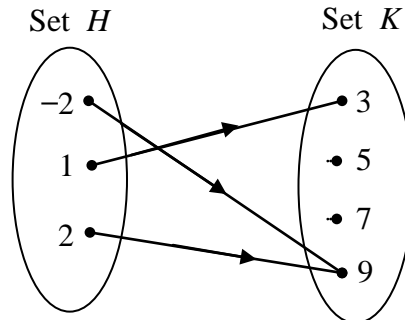


Diagram 1

*Rajah 1*

The relation is defined by the set of ordered pairs  $\{(-2, 9), (1, m), (n, 9)\}$ .

*Hubungan itu ditakrifkan oleh set pasangan tertib  $\{(-2, 9), (1, m), (n, 9)\}$ .*

State

*Nyatakan*

- (a) the value of  $m$  and of  $n$ .  
*nilai  $m$  dan nilai  $n$ .*
- (b) the type of the relation.  
*jenis hubungan itu.*

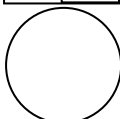
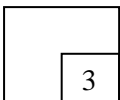
[3 marks]  
[3 markah]

Answer/Jawapan:

(a)

(b)

1



- 2 The following information refers to the functions  $f$  and  $g$  and the composite function  $f^{-1}g$ .

*Maklumat berikut adalah berkaitan dengan fungsi  $f$  dan  $g$  dan fungsi gubahan  $f^{-1}g$ .*

$$\begin{aligned} f: x &\rightarrow 5x - 3 \\ g: x &\rightarrow \frac{6}{x} \\ f^{-1}g(p) &= 3 \end{aligned}$$

Find the value of  $p$ .

*Cari nilai  $p$ .*

[3 marks]  
[3 markah]

Answer/Jawapan:

- 3 Given that function  $f(x) = 3x - k$  and  $g^{-1}(x) = 2 - 3x$ . Find the value of  
*Diberi fungsi  $f(x) = 3x - k$  dan  $g^{-1}(x) = 2 - 3x$ . Cari nilai bagi*

(a)  $g(3)$ ,

(b)  $k$  if  $g^{-1}f(1) = 8$

$k$  jika  $g^{-1}f(1) = 8$ .

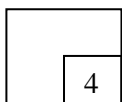
[4 marks]  
[4 markah]

Answer/Jawapan:

(a)

(b)

3



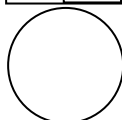
- 4 The quadratic equation  $x^2 + 2px + 3p - 2 = 0$ , where  $p$  is a constant, has two equal roots. Find the possible values of  $p$ .

*Persamaan kuadratik  $x^2 + 2px + 3p - 2 = 0$ , dengan keadaan  $p$  ialah pemalar, mempunyai dua punca yang sama. Cari nilai-nilai yang mungkin bagi  $p$ .*

[3 marks]  
[3 markah]

Answer/Jawapan:

4



- 5 Diagram 5 shows the graph of a quadratic function  $f(x) = (x - p)^2 - 5$ , where  $p$  is a constant, has a minimum point at  $(-3, q)$ .

Rajah 5 menunjukkan graf fungsi kuadratik  $f(x) = (x - p)^2 - 5$ , dengan keadaan  $p$  ialah pemalar, mempunyai titik minimum di  $(-3, q)$ .

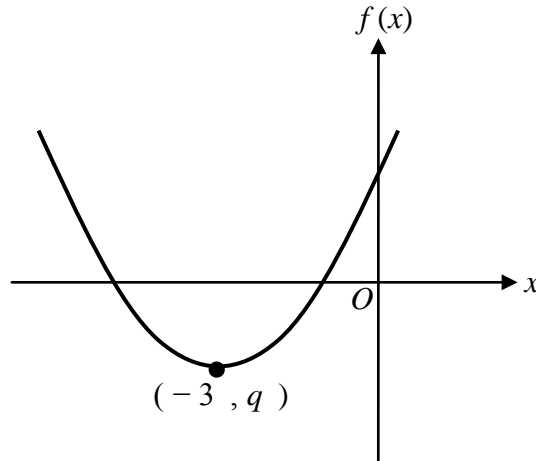


Diagram 5  
Rajah 5

- (a) Find the value of  $p$  and of  $q$ .  
*Cari nilai  $p$  dan nilai  $q$ .*
- (b) State the equation of the axis of symmetry of the curve.  
*Nyatakan persamaan paksi simetri bagi lengkung itu.*

[3marks]  
[3markah]

Answer/Jawapan:

(a)

(b)

**6**

Find the range of values of  $x$  for  $x^2 - 3 \leq \frac{9-x}{2}$  .

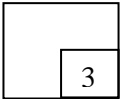
[3 marks]

Cari julat nilai  $x$  bagi  $x^2 - 3 \leq \frac{9-x}{2}$  .

[3 markah]

Answer/Jawapan:

**6**



**7**

Given that  $\log_2 h = a$  and  $\log_2 k = b$  , express  $\log_8 16h^3k$  in terms of  $a$  and  $b$  .

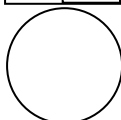
[3 marks]

Diberi  $\log_2 h = a$  dan  $\log_2 k = b$  , ungkapkan  $\log_8 16h^3k$  dalam sebutan  $a$  dan  $b$  .

[3 markah]

Answer/Jawapan:

**7**





- 8** Solve the equation :  
*Selesaikan persamaan :*

$$\sqrt{\sqrt{7(49^{x-1})}} = \frac{1}{343}$$

[3 marks]  
[3 markah]

Answer/Jawapan:

**8**

3

- 
- 9** An arithmetic progression consists of 26 terms. Given the first term is 2 and the sum of the last 8 terms is 532. Find the 15<sup>th</sup> term of the progression.

[4marks]

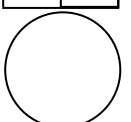
*Suatu jangjang aritmetik mengandungi 26 sebutan. Diberi sebutan pertama ialah 2 dan hasil tambah 8 sebutan terakhir ialah 532 .Cari sebutan ke-15 bagi jangjang itu.*

[4markah]

Answer/Jawapan:

**9**

4



**10**

The first term and second term of a geometric progression is  $\frac{m^3}{9}$  and  $m$  respectively.

*Sebutan pertama dan kedua suatu jangjang geometri masing-masing ialah  $\frac{m^3}{9}$  dan  $m$ .*

Find  
Cari

- (a) the values, other than zero, that are not possible for  $m$ .  
*nilai-nilai yang tidak mungkin bagi  $m$  selain daripada sifar.*
- (b) sum of the first 5 terms of the geometric progression if  $m = 9$   
*hasil tambah 5 sebutan yang pertama bagi jangjang geometri itu jika  $m = 9$*

[4 marks]

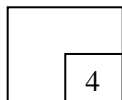
[4 markah]

Answer/Jawapan:

(a)

(b)

**10**



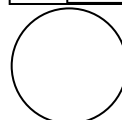
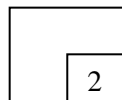
**11**

Given that  $9 + 3 + 1 + \frac{1}{3} + \dots$  is an infinite series of a geometric progression. Find the sum to infinity of the series. [2 marks]

*Diberi  $9 + 3 + 1 + \frac{1}{3} + \dots$  ialah satu siri takterhingga bagi suatu jangjang geometri. Cari hasil tambah hingga sebutan ketakterhinggaan bagi siri itu.* [2 markah]

Answer/Jawapan:

**11**



- 12 Diagram 12 shows a straight line graph obtained by plotting  $xy$  against  $x^2$ .  
Rajah 12 menunjukkan graf garis lurus yang diperoleh dengan memplot  $xy$  melawan  $x^2$ .

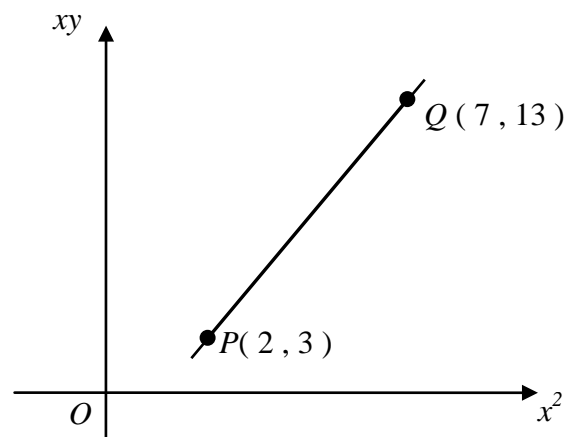


Diagram 12  
Rajah 12

The variables  $x$  and  $y$  are related by the equation  $y - ax = \frac{b}{x}$ . Find the value of

Pembolehubah  $x$  dan  $y$  dihubungkan oleh persamaan  $y - ax = \frac{b}{x}$ . Cari nilai bagi

- (a)  $a$   
(b)  $b$

[4marks]  
[4markah]

Answer/Jawapan:

(a)

(b)

- 13** Given that  $M(3,2)$  and  $N(0,4)$ . A point  $P(x,y)$  moves such that  $PM : PN = 1 : 2$ . Find the equation of the locus of point  $P$ .

*Diberi titik  $M(3,2)$  dan titik  $N(0,4)$ . Titik  $P(x,y)$  bergerak dengan keadaan  $PM : PN = 1 : 2$ . Cari persamaan lokus bagi titik  $P$ .*

[3 marks]  
[3 markah]

Answer/Jawapan:

**13**

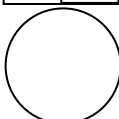
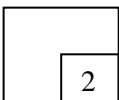


- 14** Given that the points  $S(k,2)$ ,  $T(3,4)$  and  $U(11,8)$  are collinear. Find the value of  $k$ .  
*Diberi titik-titik  $S(k,2)$ ,  $T(3,4)$  dan  $U(11,8)$  adalah segaris. Cari nilai bagi  $k$ .*

[2 marks]  
[2 markah]

Answer/Jawapan:

**14**



- 15 Diagram 15 shows the vector  $\overrightarrow{AB}$  drawn on a Cartesian plane.  
Rajah 15 menunjukkan vektor  $\overrightarrow{AB}$  yang dilukis pada suatu satah Cartesian.

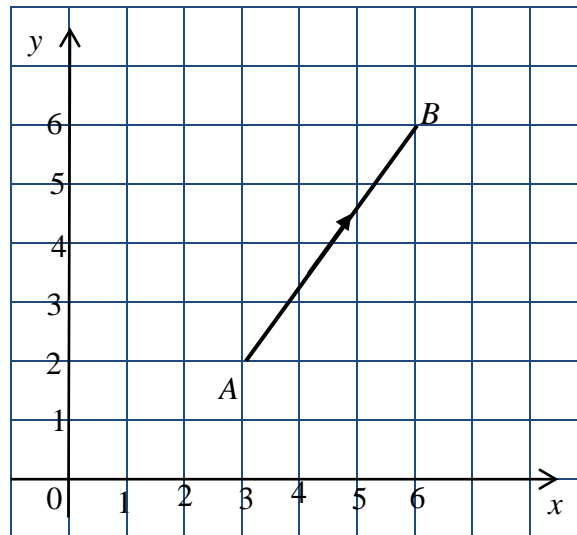


Diagram 15  
Rajah 15

- (a) Express  $\overrightarrow{AB}$  in the form  $x\mathbf{i} + y\mathbf{j}$   
Ungkapkan  $\overrightarrow{AB}$  dalam bentuk  $x\mathbf{i} + y\mathbf{j}$
- (b) Find the unit vector in the direction of  $\overrightarrow{AB}$ .  
Cari vektor unit dalam arah  $\overrightarrow{AB}$ .

[3 marks]  
[3 markah]

Answer/Jawapan:

(a)

(b)

For  
examiner's  
use only

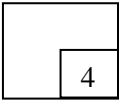
- 16 Given that  $\overrightarrow{OA} = 3\mathbf{i} + 8\mathbf{j}$ ,  $\overrightarrow{AB} = 3\mathbf{i} + 4\mathbf{j}$  and  $3\overrightarrow{OC} = \overrightarrow{OB}$ , where  $\overrightarrow{OA} + \overrightarrow{AB} + m\overrightarrow{OC} = \mathbf{0}$ . Find the value of  $m$ .

Diberi  $\overrightarrow{OA} = 3\mathbf{i} + 8\mathbf{j}$ ,  $\overrightarrow{AB} = 3\mathbf{i} + 4\mathbf{j}$  dan  $3\overrightarrow{OC} = \overrightarrow{OB}$ , di mana  $\overrightarrow{OA} + \overrightarrow{AB} + m\overrightarrow{OC} = \mathbf{0}$ . Cari nilai  $m$

[4 marks]  
[4 markah]

Answer/Jawapan:

16



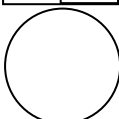
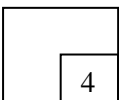
- 17 Solve the equation  $3\cos 2x = 8\sin x - 5$  for  $0^\circ \leq x \leq 360^\circ$ .

Selesaikan persamaan  $3\cos 2x = 8\sin x - 5$  bagi  $0^\circ \leq x \leq 360^\circ$ .

[4 marks]  
[4 markah]

Answer/Jawapan:

17



18

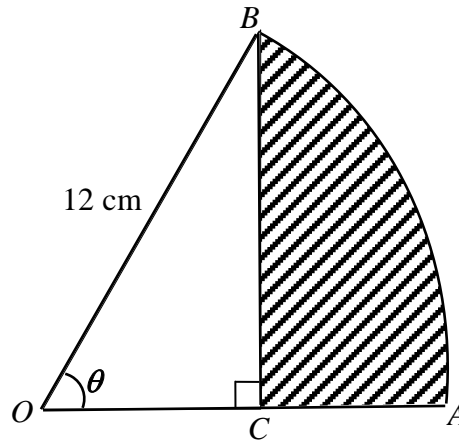


Diagram 18

Rajah 18

Diagram 18 shows a sector  $AOB$  of a circle with centre  $O$  and radius of  $12$  cm. Given that point  $C$  is the midpoint of  $OA$ . Find

- (a)  $\angle AOB$ , in radians,  
 (b) the area, in  $\text{cm}^2$ , of the shaded region.

[4 marks]

Rajah 18 menunjukkan sebuah sektor  $AOB$  bagi sebuah bulatan berpusat  $O$  dan berjajari  $12$  cm. Diberi bahawa titik  $C$  ialah titik tengah bagi garis  $OA$ . Cari

- (a)  $\angle AOB$ , dalam radian,  
 (b) luas, dalam  $\text{cm}^2$ , kawasan berlorek.

[4 markah]

Answer/Jawapan:

(a)

(b)

**19** Given that the mean of a set of seven numbers is 10.

- (a) Find the sum of the set of the numbers.
- (b) A number  $k$  is added into the set of the numbers, the new mean is 11.  
Find the value of  $k$ .

[3 marks]

*Diberi bahawa min bagi satu kumpulan tujuh nombor ialah 10.*

- (a) *Cari hasil tambah bagi kumpulan nombor itu.*
- (b) *Satu nombor  $k$  ditambah ke dalam kumpulan nombor itu, min baru ialah 11. Cari nilai bagi  $k$ .*

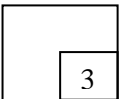
[3 markah]

Answer/Jawapan:

(a)

(b)

19



**20** Given that  $h(x) = x(2x-1)^2$ , evaluate  $h''(1)$ .

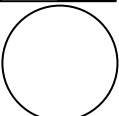
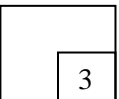
*Diberi bahawa  $h(x) = x(2x-1)^2$ , nilaikan  $h''(1)$*

[3 marks]

[3 markah]

Answer/Jawapan:

20





- 21 Given the gradient to the curve  $y = x^2 - 8x + 11$  is  $-2$  at point  $(k, -4)$ . Find the value of  $k$ .

*Diberi kecerunan bagi lengkok  $y = x^2 - 8x + 11$  ialah  $-2$  pada titik  $(k, -4)$ . Cari nilai bagi  $k$ .*

[3 marks]  
[3 markah]

Answer/Jawapan:

21

3

- 22 Given that  $y = \frac{(3x+1)^2}{x-1}$  and  $\frac{dy}{dx} = h(x)$ , find the value of  $\int_0^2 \frac{1}{5}h(x)dx$ .

[3 marks]

*Diberi bahawa  $y = \frac{(3x+1)^2}{x-1}$  dan  $\frac{dy}{dx} = h(x)$ , cari nilai bagi  $\int_0^2 \frac{1}{5}h(x)dx$ .*

[3 markah]

Answer/Jawapan:

22

3

23 In FIFA World Cup 2014, the probability of Team Y success to enter the final is  $\frac{3}{5}$ , while the probability that Team Y will win in the final is  $\frac{5}{7}$ . Find the probability that

- (a) Team Y will fail to enter the final.
- (b) Team Y will fail to become the winner in FIFA World Cup 2014.

[3 marks]

*Dalam Piala Dunia FIFA 2014, kebarangkalian bagi Pasukan Y berjaya memasuki pusingan akhir ialah  $\frac{3}{5}$ , manakala kebarangkalian bagi Pasukan Y akan menang dalam pusingan akhir ialah  $\frac{5}{7}$ . Cari kebarangkalian bahawa*

- (a) *Pasukan Y akan gagal memasuki pusingan akhir.*
- (b) *Pasukan Y akan gagal menjadi juara dalam Piala Dunia FIFA 2014.*

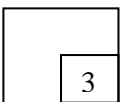
[3 markah]

Answer/Jawapan:

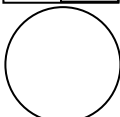
(a)

(b)

23



3



**24** A teacher wants to form a team of 8 students to collect the donation from each class. These 8 students are chosen from 4 monitors, 3 assistant monitors and 5 prefects. Calculate the number of different ways the team can be form if

- (a) there is no restriction,  
(b) the team contains only 3 monitors and 2 assistant monitors.

[3 marks]

*Seorang guru ingin membentuk satu kumpulan 8 orang murid untuk mengutip derma dari setiap kelas. Kumpulan 8 orang murid itu mesti dipilih daripada 4 orang ketua kelas, 3 orang penolong ketua kelas dan 5 orang pengawas. Hitungkan bilangan cara yang berlainan kumpulan itu boleh dibentuk jika*

- (a) *tiada syarat dikenakan*  
(b) *kumpulan itu hanya terdiri daripada 3 orang ketua kelas dan 2 orang penolong ketua kelas.*

[3 markah]

Answer/Jawapan:

(a)

(b)

For  
examiner's  
use only

- 25 Diagram 25 shows a standard normal distribution graph.  
Rajah 25 menunjukkan satu graf taburan normal piawai.

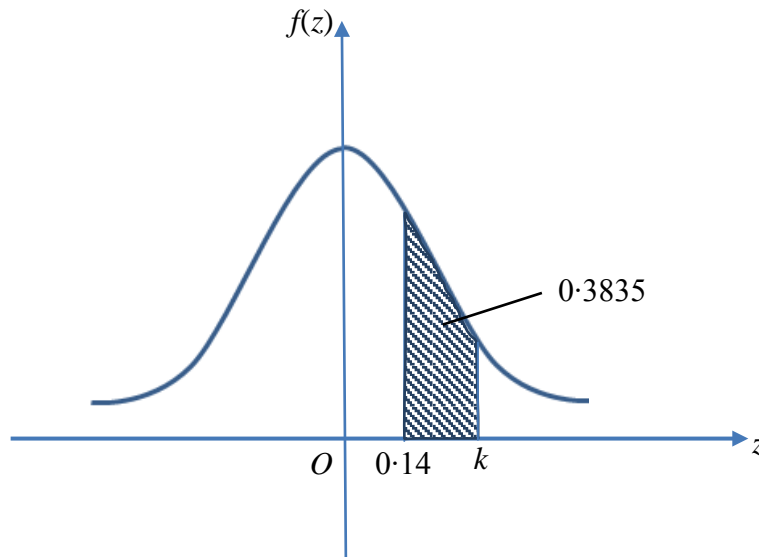


Diagram 25  
Rajah 25

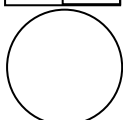
The probability represented by the area of the shaded region is 0.3835. Find the value of  $k$ .

Kebarangkalian yang diwakili oleh luas kawasan berlorek ialah 0.3835. Cari nilai  $k$ .

[3 marks]  
[3 markah]

Answer/Jawapan:

25



3472/1

END OF QUESTION PAPER  
KERTAS SOALAN TAMAT

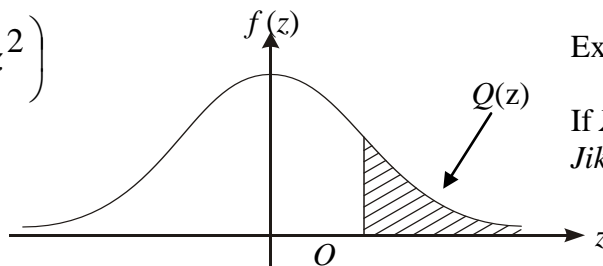
SULIT

**THE UPPER TAIL PROBABILITY  $Q(z)$  FOR THE NORMAL DISTRIBUTION  $N(0,1)$   
KEBARANGKALIAN Hujung Atas  $Q(z)$  BAGI TABURAN NORMAL  $N(0, 1)$**

z										Minus / Tolak									
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859	4	8	12	15	19	23	27	31	35
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483	4	7	11	15	19	22	26	30	34
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121	4	7	11	15	18	22	25	29	32
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776	3	7	10	14	17	20	24	27	31
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451	3	7	10	13	16	19	23	26	29
0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148	3	6	9	12	15	18	21	24	27
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867	3	5	8	11	14	16	19	22	25
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611	3	5	8	10	13	15	18	20	23
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379	2	5	7	9	12	14	16	19	21
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170	2	4	6	8	10	12	14	16	18
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985	2	4	6	7	9	11	13	15	17
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823	2	3	5	6	8	10	11	13	14
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681	1	3	4	6	7	8	10	11	13
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559	1	2	4	5	6	7	8	10	11
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455	1	2	3	4	5	6	7	8	9
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367	1	2	3	4	4	5	6	7	8
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294	1	1	2	3	4	4	5	6	6
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233	1	1	2	2	3	4	4	5	5
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183	0	1	1	2	2	3	3	4	4
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143	0	1	1	2	2	2	3	3	4
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110	0	1	1	1	2	2	2	3	3
2.3	0.0107	0.0104	0.0102								0	1	1	1	1	2	2	2	2
				0.00990	0.00964	0.00939	0.00914				3	5	8	10	13	15	18	20	23
								0.00889	0.00866	0.00842	2	5	7	9	12	14	16	16	21
2.4	0.00820	0.00798	0.00776	0.00755	0.00734						2	4	6	8	11	13	15	17	19
						0.00714	0.00695	0.00676	0.00657	0.00639	2	4	6	7	9	11	13	15	17
2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480	2	3	5	6	8	9	11	12	14
2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357	1	2	3	5	6	7	9	9	10
2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264	1	2	3	4	5	6	7	8	9
2.8	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193	1	1	2	3	4	4	5	6	6
2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139	0	1	1	2	2	3	3	4	4
3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100	0	1	1	2	2	2	3	3	4

$$f(z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2}z^2\right)$$

$$Q(z) = \int_k^{\infty} f(z) dz$$



Example / Contoh:

If  $X \sim N(0, 1)$ , then  $P(X > k) = Q(k)$   
Jika  $X \sim N(0, 1)$ , maka  $P(X > k) = Q(k)$

**HALAMAN KOSONG**

**HALAMAN KOSONG**

**INFORMATION FOR CANDIDATES**  
**MAKLUMAT UNTUK CALON**

1. This question paper consists of **25** questions.  
*Kertas soalan ini mengandungi 25 soalan.*
2. Answer **all** questions.  
*Jawab **semua** soalan.*
3. Write your answers in the spaces provided in the question paper.  
*Tulis jawapan anda dalam ruang yang disediakan dalam kertas soalan.*
4. Show your working. It may help you to get marks.  
*Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.*
5. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.  
*Sekiranya anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.*
6. The diagrams in the questions provided are not drawn to scale unless stated.  
*Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
7. The marks allocated for each question are shown in brackets.  
*Markah yang diperuntukkan bagi setiap soalan ditunjukkan dalam kurungan.*
8. A list of formulae is provided on pages 2 and 3.  
*Satu senarai rumus disediakan di halaman 2 dan 3.*
9. A booklet of four-figure mathematical tables is provided.  
*Sebuah buku sifir matematik empat angka disediakan.*
10. You may use a non-programmable scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*
11. Hand in this question paper to the invigilator at the end of the examination.  
*Serahkan kertas soalan ini kepada pegawai peperiksaan di akhir peperiksaan.*



*Additional  
Mathematics  
Paper 1*

*Ogos, 2014*



**MODUL PENINGKATAN PRESTASI TINGKATAN 5  
TAHUN 2014**

**ANJURAN  
MAJLIS PENGETUA SEKOLAH MALAYSIA (KEDAH)**

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**ADDITIONAL MATHEMATICS**

**MARKING SCHEME**

**Paper 1**

**MODUL 2**

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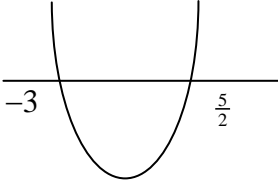
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## PROGRAM PENINGKATAN PRESTASI AKADEMIK SPM 2014

## Marking Scheme Module 2

## Additional Mathematics Paper 1

Question	Solution/ Marking Scheme	Answer	Marks
1	(a) B1 : $m = 3$ or $n = 2$	(a) $m = 3$ AND $n = 2$	2
		(b) many – to – one	1
2	B2 : $\left(\frac{6}{p}\right) = f(3)$ or $\frac{6}{p} = 12$ B1 : $f^{-1}\left(\frac{6}{p}\right) = 3$	$p = \frac{1}{2}$	3
3	(a) B1 : $2 - 3y = 3$	(a) $g(3) = -\frac{1}{3}$	2
	(b) B1 : $2 - 3(3 - k) = 8$	(b) $k = 5$	2
4	B2 : $(p-1)(p-2) = 0$ or $p=1$ or $p=2$ B1 : $(2p)^2 - 4(1)(3p-2)$	$p=1$ AND $p=2$	3
5	(a) B1 : $p = -3$ or $q = -5$	(a) $p = -3$ AND $q = -5$	2
		(b) $x = -3$	1

Question	Solution/ Marking Scheme	Answer	Marks
6	<p>B2 : </p> <p>or <math>x = \frac{5}{2}</math> , <math>x = -3</math></p> <p>B1: <math>(2x-5)(x+3)</math></p>	$-3 \leq x \leq \frac{5}{2}$	3
7	<p>B2 : <math>\frac{\log_2 16 + \log_2 h^3 + \log_2 k}{\log_2 8}</math></p> <p><math>\log_2 16</math> or <math>\log_2 h^3</math> or</p> <p>B1 : <math>\log_2 k</math> or <math>\log_2 8</math></p>	$\frac{4 + 3a + b}{3}$	3
8	<p>B2: <math>1 + 2x - 2 = -6</math></p> <p>B1 : <math>7(7)^{2(x-1)}</math> or <math>(7^{-3})^2</math></p>	$-\frac{5}{2}$	3
9	<p>B3 : <math>2 + 14(3)</math></p> <p>B2 : <math>\frac{26}{2}[2(2) + 25d] - \frac{18}{2}[2(2) + 17d] = 532</math> or <math>d = 3</math></p> <p>B1 : <math>\frac{26}{2}[2(2) + 25d]</math> or <math>\frac{18}{2}[2(2) + 17d]</math></p>	44	4

Question	Solution/ Marking Scheme	Answer	Marks
10	<p>(a) B1: <math>\frac{m}{m^3} = 1</math></p> <p>(b) B1: <math>S_5 = \frac{81\left(1 - \left(\frac{1}{9}\right)^5\right)}{1 - \frac{1}{9}}</math></p>	<p>(a) <math>m = 3</math> AND <math>m = -3</math></p> <p>(b) 91.123</p>	<p>2</p> <p>2</p>
11	B1: $r = \frac{1}{3}$	$\frac{27}{2}$	2
12	<p>(a) B1: <math>xy = ax^2 + b</math></p> <p><math>13 = 7*(2) + b</math></p> <p>(b) B1 : or</p> <p><math>3 = 2*(2) + b</math></p>	<p>(a) 2</p> <p>(b) <math>b = -1</math></p>	<p>2</p> <p>2</p>
13	<p>B2 :</p> <p><math>4\left[(x-3)^2 + (y-2)^2\right] = x^2 + (y-4)^2</math></p> <p>B1 :</p> <p><math>\sqrt{(x-3)^2 + (y-2)^2}</math> or <math>\sqrt{(x-0)^2 + (y-4)^2}</math></p>	$3x^2 + 3y^2 - 24x - 8y + 36 = 0$	3
14	<p>B1:</p> <p><math>\frac{1}{2}\left[(11 \times 4) + (3 \times 2) + (k \times 8)\right] - \left[(8 \times 3) + (k \times 4) + (11 \times 2)\right] = 0</math></p> <p>OR</p> <p><math>\frac{8-4}{11-3} = \frac{4-2}{3-k}</math></p>	$k = -1$	2

Question	Solution/ Marking Scheme	Answer	Marks
15	(b) B1 : 5 or $\sqrt{3^2+4^2}$	(a) $3\underline{i} + 4\underline{j}$ (b) $\frac{3\underline{i} + 4\underline{j}}{5}$	1 2
16	B3 : $6 + 2m = 0$ OR $12 + 4m = 0$  B2 : $\begin{pmatrix} 3 \\ 8 \end{pmatrix} + \begin{pmatrix} 3 \\ 4 \end{pmatrix} + \frac{m}{3} \begin{pmatrix} 6 \\ 12 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$  B1 : $\overrightarrow{OB} = \begin{pmatrix} 6 \\ 12 \end{pmatrix}$	$m = -3$	4
17	B3 : $x = 41.81^\circ$ or $x = 138.19^\circ$  B2 : $-6\sin^2 x - 8\sin x + 8 = 0$ or $\sin x = -2$ or $\sin x = \frac{2}{3}$  B1 : $3(1 - 2\sin^2 x) = 8\sin x - 5$	$x = 41.81^\circ$ AND $x = 138.19^\circ$	4
18	(b) B2: $\frac{1}{2}(12)^2 * (1.047) - \frac{1}{2}(6)(10.392)$ B1: $\frac{1}{2}(12)^2 * (1.047)$ or $\frac{1}{2}(6)(10.392)$	(a) 1.047rad  (b) 44.21	1 3

Question	Solution/ Marking Scheme	Answer	Marks
19	(b) B1: $\frac{*70+k}{8} = 11$	(a) 70 (b) $k = 18$	1 2
20	B2 : $h''(1) = 24 - 8$ B1 : $h'(x) = 12x^2 - 8x + 1$	16	3
21	B2 : $2k - 8 = -2$ or $x = 3$ B1 : $2x - 8$	$k = 3$	3
22	B2 : $\frac{1}{5} \left[ \frac{(3x+1)^2}{x-1} \right]_0^2$ or $\frac{1}{5} [49 - (-1)]$ B1 : $\int h(x) dx = \frac{(3x+1)^2}{x-1}$	10	3
23	(b) B1: $\frac{2}{5} + \left( \frac{3}{5} \times \frac{2}{7} \right)$ or $1 - \left( \frac{3}{5} \times \frac{5}{7} \right)$	(a) $\frac{2}{5}$ (b) $\frac{4}{7}$	1 2
24	(b) B1 : ${}^4C_3 \times {}^3C_2 \times {}^5C_3$	(a) 495 (b) 120	1 2
25	B2 : $p(z > k) = 0.0608$ B1 : $P(z > 0.14) = 0.4443$	$k = 1.548$	3

**END OF MARKING SCHEME**