3472/1

Matematik
Tambahan
Kertas 2
2 jam 30 minit
Ogos 2015

JABATAN PELAJARAN NEGERI KELANTAN

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA 2015
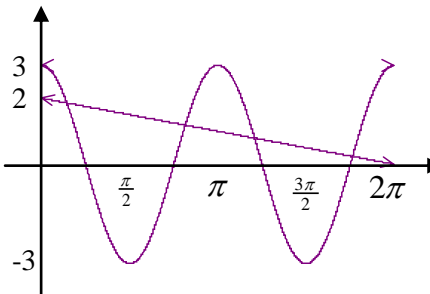
ADDITIONAL MATHEMATICS

Paper 2

MARKING SCHEME

MAJLIS PENGETUA KELANTAN
PEPERIKSAAN PERCUBAAN SPM 2015
SKEMA PERMARKAHAN MATEMATIK TAMBAHAN KERTAS 2

NO	SOLUTIONS	MARKS	TOTAL
1.	$y = 2x - 4$ $\qquad$ *atau* $\qquad x = \dfrac{y+4}{2}$	P1	
	$(2x-4)^2 = 2(x^2+2)$ $\qquad$ *atau* $\quad y^2 = 2\left[\left(\dfrac{y+4}{2}\right)^2 + 2\right]$	K1	
	$x^2 - 8x + 6 = 0$ $\qquad$ *atau* $\quad y^2 - 8y - 20 = 0$		
	$x = \dfrac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(6)}}{2(1)}$ $\qquad$ *atau*	K1	5
	$y = \dfrac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(-20)}}{2(1)}$		
	$x = 7.162 , 0.838$ (*both*)	N1	
	$y = 10.325 , -2.325$ (*both*)	N1	
2(a)	$(0, 3)$	N1	
(b)	$= -2\left[x^2 - \dfrac{k}{2}x + \left(-\dfrac{k}{4}\right)^2 - \left(-\dfrac{k}{4}\right)^2 - \dfrac{3}{2} \right]$	K1	
	$= -2\left(x - \dfrac{k}{4} \right)^2 + \dfrac{k^2}{8} + 3$	K1	6
	$\dfrac{k^2}{8} + 3 = 5$	K1	
	$k = 4, \qquad p = 1$	N1, N1	
3(a)	$3x, \; 3x+6, \; 3x+12, \; \ldots$	P1	
	$765 = \dfrac{15}{2}\left[2(3x) + (14)(6) \right]$	K1	
	$x = 3$	N1	
(b)	$T_{15} = 9 + (14)(6)$	N1	7
	$= 93$		
(c)	$\dfrac{n}{2}\left[2(9) + (n-1)(6) \right] = 1320$	K1	
	$n^2 + 2n - 440 = 0$ atau setara	K1	
	$(n+22)(n-20) = 0$	N1	
	$n = 20$		

4(a)	$\dfrac{3(1-\cos^2 x)}{\sin x \cos x}$ $\dfrac{3\sin^2 x}{\sin x \cos x}$ $3\tan x$	**K1** **N1**	
(b)	 shape of cosine graph amplitud = 3 Kala = 2 straight line $y = 2 - \dfrac{x}{\pi}$ No. of solutions = 4	**P1** **P1** **P1** **K1** **N1** **N1**	**8**
5(a)	Saiz Ikan / Bil. Ikan table: 25 – 29 : 8 30 – 34 : 7 35 – 39 : 10 40 – 44 : 6 45 – 49 : 5 50 – 54 : 4 P1 untuk saiz kelas betul P1 untuk semua kekerapan betul P1 jika 10 dilihat	**P1** **P1**	
(b)	$m = \dfrac{8(27)+7(32)+10(37)+6(42)+5(47)+4(52)}{40}$ $= 37.625$	**K1** **N1**	**7**
(c)	$\sigma = \sqrt{\dfrac{8(27)^2+7(32)^2+10(37)^2+6(42)^2+5(47)^2+4(52)^2}{40} - (37.625)^2}$ $= \sqrt{\dfrac{59135}{40} - (37.625)^2}$ $= 7.9205$	**K1** **K1** **N1**	

The table in 5(a):

Saiz Ikan	Bil. Ikan
25 – 29	8
30 – 34	7
35 – 39	10
40 – 44	6
45 – 49	5
50 – 54	4

6(a)	$\overrightarrow{BC} = \overrightarrow{BA} + \overrightarrow{AC}$ or $\overrightarrow{AD} = \overrightarrow{AB} + \overrightarrow{BD}$	K1	
	$\overrightarrow{BC} = -3\underset{\sim}{x} + 2\underset{\sim}{y}$	N1	
	$\overrightarrow{AD} = \dfrac{9}{4}\underset{\sim}{x} + \dfrac{1}{2}\underset{\sim}{y}$	N1	
(b)	$\overrightarrow{AF} = k\,\overrightarrow{AD}$ $= \dfrac{9}{4}k\underset{\sim}{x} + \dfrac{1}{2}k\underset{\sim}{y}$	P1	
	$\overrightarrow{AF} = \overrightarrow{AE} + k\,\overrightarrow{AD}$		8
	$= \dfrac{2}{3}\underset{\sim}{y} + h(-\dfrac{3}{2}(2\underset{\sim}{y}) + 3\underset{\sim}{x})$	K1	
	$= 3h\underset{\sim}{x} + (\dfrac{2}{3} - \dfrac{2}{3}h)\underset{\sim}{y}$	N1	
	Compare and solve the equation $3h = \dfrac{9}{4}k$ or $\dfrac{2}{3} - \dfrac{2}{3}h = \dfrac{1}{2}k$ $\dfrac{2}{3} - \dfrac{2}{3}(\dfrac{3}{4}k) = \dfrac{1}{2}k$	K1	
	$k = \dfrac{2}{3}$, $h = \dfrac{1}{2}$ (both)	N1	

x	1	2	4	6	8	9
Log$_{10}$ y	0.84	0.99	1.29	1.57	1.87	2.00

7 (a)

Paksi betul dan skala seragam
Plot 5 titik betul
Garis lurus penyuaian terbaik

N1
K1
N1
N1

(b)
$$\log_{10} y = \log_{10} V + x \log_{10} T$$

P1

10

(i)
$$\log_{10} T = 0.1411$$
$$T = 1.384 \ (1.35 - 1.43)$$

K1
N1

(ii)
$$\log_{10} V = 0.73$$
$$V = 5.370$$

K1
N1

(iii) $\log_{10} y = 1.7$, $x = 6.9$

N1

8(a) $p = 0.8, q = 02$

P1

$$P(X \geq 9) = {}^{10}C_9 (0.8)^9 (0.2)^1 + {}^{10}C_{10}(0.8)^{10}(0.2)^1$$
$$= 0.3758$$

K1K1
N1

(b)
(i)
$$P\left(\frac{68-70}{2.5} \leq Z \leq \frac{75-70}{2.5} \right)$$
$$= 0.76539$$

K1
N1

10

(ii)
$$P(z < \frac{m-70}{2.5}) = 0.25$$

K1

$$P(z < \frac{m-70}{2.5}) = p(z < -0.674)$$

K1

$$\frac{m-70}{2.5} = -0.674$$
$$m = 68.315$$

K1
N1

9 (a)	$-2x = -2$	K1	
	$h = 1$	N1	
	$k = 2$	N1	
(b)	$Area = \dfrac{1}{2}(1)(2 = 4) - \displaystyle\int_{0}^{1} 3 - x^2 dx$	K1	
	$= 3 - \left[3x - \dfrac{x^3}{3} \right]_{0}^{1}$	K1	
		K1	10
	$= \dfrac{1}{3}$	N1	
(c)	$Volume = \dfrac{1}{3}\pi(1)^2(2) - \pi\displaystyle\int_{2}^{3}(3 - y)dy$	K1 K1	
	$\dfrac{1}{2}\pi$	N1	

10(a)	(i) $x = 4$	P1	
	(ii) $3y + 2(4) = 11$	K1	
	$\quad\quad y = 1$		
	$\quad C(4,\ 1)$	N1	
(b)	$\dfrac{0 + 2x}{5} = 4$	K1	
	$\dfrac{0 + 2y}{5} = 1$	K1	
	$D(10, \dfrac{5}{2})$	N1	10
(c)	$FD = 4$	K1	
	$\sqrt{(x-10)^2 + (y - \dfrac{5}{2})^2} = 4$	K1	
	$(x-10)^2 + (y - \dfrac{5}{2})^2 = 16$	K1	
	$4x^2 + 4y^2 - 80x - 20y + 361 = 0$	N1	

11(a)	$\theta = 60^0$	P1	
	$\theta = 1.047$	N1	
(b)	Perimeter $= 14(1.047)+14(1.047) + 14$	K1K1K1	
	$= 43.32$	N1	
(c)	$Area = \frac{1}{2}(14)^2(1.047) \times 2 - \frac{1}{2}(14)^2 \sin 60$	K1K1K1	
	$= 120.34$	N1	

12 (a)	$\frac{275000}{Q_{11}} \times 100 = 110$	K1	
	$Q_{11} = 250\ 000$	N1	
(b)	$\frac{Q_{11}}{Q_{10}} = \frac{92}{100}, \qquad \frac{Q_{13}}{Q_{10}} = \frac{115}{100}$	P1	
	$\frac{p}{100} = \frac{115}{100} \times \frac{100}{92}$	K1	
	$p = 125$	N1	
(c)	$\bar{I} = \frac{110(4)+125(6)+125(10)}{20}$	K1	
	$= 122$	N1	
(d)	$122 = \frac{805200}{Q_{11}} \times 100$	K1 K1	
	$Q_{11} = 660,000$	N1	

13 (a) i)	$\dfrac{RU}{\sin 56} = \dfrac{9}{\sin 68}$ $RU = 8.0473 @ 8.05$	K1 N1	
ii)	$TU^2 = 7^2 + 8.0473^2 - 2\,(7)(8.0473)\,\text{kos }124^0$	K1	
	$\dfrac{13.2951}{\sin 124^0} = \dfrac{8.0473}{\sin T}$	K1	
	$\angle STU = 30.12^o @ 30^o 7^{'}$	N1	10
(b) i)	VM = 5 dan VL = $\sqrt{89}$ dan JL = $\sqrt{208}$	P1	
	$208 = 13^2 + 89 - 2(13)(\sqrt{89})\,\text{kos }\angle JVL$	K1	
	$\angle JVL = 78.24^o @ 78^o 14^{'}$	N1	
ii)	Luas $= \dfrac{1}{2}(13)(\sqrt{89})\sin 78^o 14^{'}$ $= 60.03$	K1 N1	

14 (a)	$y \geq 100$ $200 \leq x \leq 500$ $x + y \leq 700$ $x - 2y \leq 200$	N3,2,1,0	
(b)	Graf	K1(satu garis betul) N1(semua garis betul) N1 rantau betul	
(c) (i)	Bilangan maksimum bekas plastik bulat $= 450$	N1	
(ii)	k = 0.8x + 0.6y = 0.8(500)+0.6(200) = RM 520	N1 (500, 200) K1 N1	

15 (a)	$6t^2 + 2t - 4 = 0$ $t = \dfrac{2}{3}$ $v_Y = \dfrac{8}{3}$	K1 N1 N1	
(b)	$a_X = 12t + 2$ $S_Y = 8t - 4t^2$ $8t - 4t^2 = 0$ $t = 2$ $a_Y = 26 \text{ ms}^{-1}$	K1 K1 N1 N1	10
(c)	$2t^3 + t^2 - 4t = 8t - 4t^2$ $t = \dfrac{3}{2} \; saat$ $s_Y = 8(\dfrac{3}{2}) - 4(\dfrac{3}{2})^2 \quad atau \quad s_X = 2(\dfrac{3}{2})^3 + (\dfrac{3}{2})^2 - 4(\dfrac{3}{2})$ $\qquad = 3 \qquad\qquad\qquad\qquad\qquad = 3$	K1 N1 N1	

$y = 0.145x + 0.700$