(TRIAL) 2017
PERATURAN PEMARKAHAN ADDITIONAL MATHEMATICS
KERTAS 2

BAHAGIAN *A* [40 MARKAH]		
No.	**PERATURAN PEMARKAHAN**	**Σ MARKAH**
1	$x = 3 - y$ atau $y = 3 - x$ **P1** $(3-y)^2 + y^2 - y(3-y) = 21$ $x^2 + (3-x)^2 - x(3-x) = 21$ **K1** $3y^2 - 9y - 12 = 0$ $3x^2 - 9x - 12 = 0$ $(y+1)(y-4) = 0$ **K1** $(x+1)(x-4) = 0$ **K1** $y = -1$; $y = 4$ $x = -1$; $x = 4$ $x = 4$; $x = -1$ $y = 4$; $y = -1$ $(-1, 4)$ **N1** dan $(4, -1)$ **N1**	**5**
2	(*a*) (i) Guna $T_n = a + (n-1)d$ $100 + (5-1)(20)$ **K1** 180 **N1** (ii) $100 + (n-1)(20) = 260$ **K1** $n = 9$ **N1** (*b*) Guna $S_n = \frac{n}{2}[2a + (n-1)d]$ $S_{12} = \frac{12}{2}[2(100) + (12-1)(20)]$ **K1** 201600 **N1**	**6**

No.	PERATURAN PEMARKAHAN	Σ MARKAH
3	(*a*) 1.396 rad **N1 (80°** belum dapat markah) (*b*) Panjang lengkuk *DEA* = 6(1.396) atau Panjang *DC* = 2[6 sin 50°] atau $DC^2 = 6^2 + 6^2 - 2(6)(6)\cos 100°$ **K1** Perimeter = 6(1.396) + 2(4.596) + 2(6) **K1(menambah)** = 29.57 **N1** c) Luas sektor ODEA = $\frac{1}{2}(6)^2(1.396)$ atau luas segi tiga ODC = $\frac{1}{2}(6)(6)\sin 100^0$ *atau* $\frac{1}{2}(9.192)(3.857)$ **K1** luas kawasan berlorek = $\frac{1}{2}(6)^2(1.396)$ + $\frac{1}{2}(6)(6)\sin 100^0$ *atau* $\frac{1}{2}(9.192)(3.857)$ **K1** = 42.85//42.86 **N1**	**7**

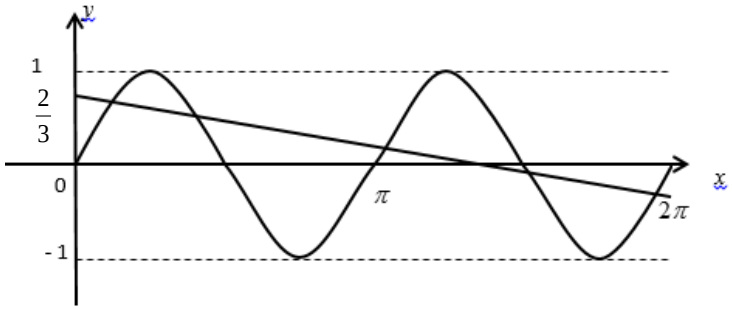
No.	PERATURAN PEMARKAHAN	Σ MARKAH
4	(a) $288\pi = \frac{4}{3}\pi r^3$ **K1** (find r) $r = 6$ cm guna $\frac{dV}{dt} = \frac{dV}{dr} \times \frac{dr}{dt}$ **K1** $x = -36\pi$ cm^3s^{-1} **N1** (b) guna $\frac{dA}{dt} = \frac{dA}{dr} \times \frac{dr}{dt}$ **K1** $= 12\pi$ cm^2s^{-1} **N1** (c) Jejari selepas penyusutan = 5.4 cm **P1** Peratus penyusutan dalam isi padu $\frac{78.048}{288} \times 100\%$ **K1** 27.1 % **N1**	**8**

No.	PERATURAN PEMARKAHAN		Σ MARKAH
5	(*a*) (i) $\sum x = 112$	**N1**	**7**
	(ii) $2 = \sqrt{\frac{\sum x^2}{16} - 7^2}$	K1	
	$\sum x^2 = 848$	N1	
	(*b*) $5 = \frac{70}{N}$		
	$N = 14$	K1	
	$\bar{x} = \frac{112+70}{16+14} = 6.067$	K1	
	$\sigma^2 = \frac{(848+428)}{16+14} - \left(\frac{112+70}{16+14}\right)^2$	K1	
	$\sigma^2 = 5.725 / / 5.726 / / 5.729$	N1	

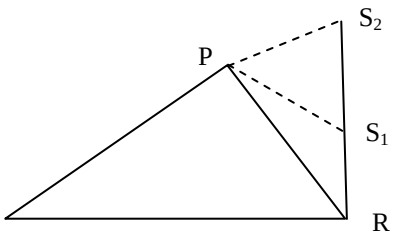
No.	PERATURAN PEMARKAHAN		Σ MARKAH
6	(a) $m_{BC} = -5$	**P1**	7
	$(\frac{3k-7}{-k-3})(-5) = -1$	**K1**	
	$k = 2$	**N1**	
	(b) $y - 7 = -5(x - 3)$	**K1**	
	$y = -5x + 22$	**N1**	
	(c) Luas $= \frac{1}{2}\|(0) - (-12)\|$	**K1**	
	$= 6$ unit^2	**N1**	

No.	PERATURAN PEMARKAHAN	Σ MARKAH
8	(a) (i) $9 = 4a + 11$ **K1** $a = -\frac{1}{2}$ **N1** (ii) $\pi\int_{9}^{11} 22 - 2y\ dy$ **K1** $\frac{1}{3}\pi(2^2)9$ **K1** untuk kon $\pi\left[22y - \frac{2y^2}{2}\right]_9^{11} + 12\pi$ **K1** pengamiran $\pi\int_{9}^{11} 22 - 2y\ dy + \frac{1}{3}\pi(2^2)9$ **K1** penambahan 16π **N1** (b) $\frac{dy}{dx} = -2$ **K1** $\delta y = (-2)(-0.01)$ **K1** (terima $\delta x = 0.01$) 0.02 **N1**	**10**

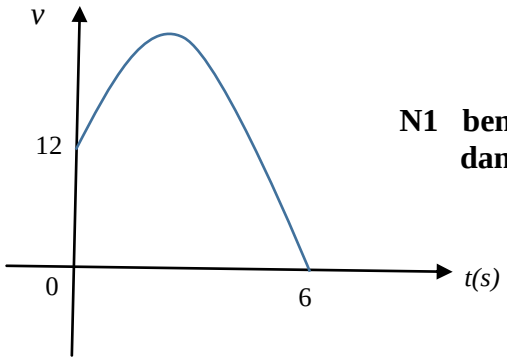
No.	PERATURAN PEMARKAHAN		Σ MARKAH
9	(a) (i) $\overrightarrow{PC} = \overrightarrow{PB} + \overrightarrow{BC}$	K1	
	$= \underline{a} + 2\underline{b}$	N1	
	(ii) $\overrightarrow{AY} = \overrightarrow{AD} + \overrightarrow{DY}$		
	$= \underset{\sim}{a} + 6\underset{\sim}{b}$	N1	
	(iii) $\overrightarrow{AT} = \overrightarrow{AP} + \overrightarrow{PT}$		
	$= \frac{3}{2}\underset{\sim}{a} + 9\underset{\sim}{b}$	N1	
	$\overrightarrow{AY} = \lambda \overrightarrow{AT}$		
	$\underset{\sim}{a} + 6\underset{\sim}{b} = \lambda(\frac{3}{2}\underset{\sim}{a} + 9\underset{\sim}{b})$	K1	
	$\lambda = \frac{2}{3}$	N1	
	(b)(i) $\left(\underline{i} + 3\underline{j}\right) + 6(2\underline{i})$	K1	
	$13\underline{i} + 3\underline{j}$	N1	
	(ii) $\sqrt{13^2 + 3^2}$	K1	
	$\frac{13\underline{i} + 3\underline{j}}{\sqrt{178}}$	N1	

No.	PERATURAN PEMARKAHAN	Σ MARKAH
10	(a) $2\cot x\sin^2 x = 2\left(\frac{\cos x}{\sin x}\right)\left(\sin^2 x\right)$ **K1** $= 2\sin x\cos x$ **N1** $= \sin 2x$ (b) $\sin 2x = 0.5$ **K1** $2x = 30^\circ, 150^\circ, 390^\circ, 510^\circ$ $x = 15^\circ, 75^\circ, 195^\circ, 255^\circ$ **N1** (c)  Graf sin x **P1** 2 kalaan dalam $0 \le x \le 2\pi$ **P1** Amplitud **P1** (ii) $y = \frac{2}{3} - \frac{x}{2\pi}$ **K1** Lakar garislurus melalui $\frac{2}{3}$ & cerun negatif **N1** No of solution = 5 **N1**	**10**

No.	PERATURAN PEMARKAHAN		Σ MARKAH
11	(*a*) (i) 0.61	**P1**	
	(ii) min = 30 x 0.61	**K1**	
	= 18.3	**N1**	
	Sisihan piawai = $\sqrt{30 \times 0.61 \times 0.39}$	**K1**	
	= 2.6715	**N1**	
	(*b*) (i) $P\left(\frac{26-30}{4} < z < \frac{32-30}{4}\right)$	**K1**	
	= 0.5328	**N1**	**10**
	(ii) $P\left(Z < \frac{26-30}{4}\right)$	**K1**	
	= 0. 1587	**N1**	
	Bil = 0.1587 x 5000		
	= 793 // 794 biji.	**N1**	

BAHAGIAN *C* [20 MARKAH]		
No.	**PERATURAN PEMARKAHAN**	**Σ MARKAH**
12	(*a*) (i) $4.5^2 = 5.4^2 + 7.2^2 - 2(5.4)(7.2)\cos Q$ **K1** $\angle PQR$ = 38° 37′ // 38.617° // 30.62° **N1** (ii) $\frac{\sin R}{5.4} = \frac{\sin Q}{4.5}$ **K1** $\angle PRQ$ = 48° 31′ / 48.517° 48.50° **N1** (*b*) (i)  **N1 ∠PSR tirus** **N1 ∠PSR cakah** (ii) $\frac{\sin S}{4.5} = \frac{\sin 25^\circ}{3.1}$ **K1** $\angle PSR$ = 37° 50′ & 142° 10′ 37.84° 142.16° **N1** (*c*) (i) $\frac{1}{2}(5.4)(7.2)\sin Q$ atau $\frac{1}{2}(4.5)(3.1)\sin P^*$ **K1** (P* = 180°-25°-142°10′) 13.68 **N1**	**10**

No.	PERATURAN PEMARKAHAN	Σ MARKAH
13	(*a*) (i) $x = \frac{7.20}{6.00} \times 100$ or $110 = \frac{y}{5.00} \times 100$ or $125 = \frac{5}{x} \times 100$ or $\frac{9.10}{5.50} \times 100$ **K1** x = 120 **N1** y = 5.5 **N1** z = 4.0 **N1** (ii) $\frac{P_{17}}{5.45} \times 100$ **K1** 166.972 **N1** (*b*) $121.5 = \frac{120(3)+110(2)+(125)(m)+130(2)}{3+2+m+2}$ **K1** m = 3 **N1** (*c*) $\frac{121.5 \times 120}{100}$ **K1** 145.8 **N1**	**10**

No.	PERATURAN PEMARKAHAN	Σ MARKAH
14	(*a*)halaju maks, $a = 0$ $4 - 2t = 0$ **K1** $t = 2$ $v = 4t - t^2 + c$, $t = 0$, $v = 12$, $c = 12$ **K1** **mencari $v = \int a\ dt$** $v = 4t - t^2 + 12$ Apabila $t = 2$, $v_{maks} = 4(2) - (2)^2 + 12$ $v = 16\ ms^{-1}$ **N1** **(***b***)**zarah berhenti seketika, $v = 0$ $4t - t^2 + 12 = 0$ or $t^2 - 4t - 12 = 0$ **K1** $(6 - t)(t + 2) = 0$ or $(t - 6)(t + 2) = 0$ **K1** $t_1 = 6$ **N1** (c)  **N1** **bentuk maksimum dan titik (0,12) & (6,0)** Jumlah jarak yg dilalui = $\int_0^6 (4t - t^2 + 12)dt$ **K1** $= \left[2t^2 - \frac{t^3}{3} + 12t \right]_0^6$ **K1** **batas betul** $= \left[2(6)^2 - \frac{(6)^3}{3} + 12(6) \right] - 0$ $= 72$ m **N1** END OF MARKING SCHEME	**10**