

**SULIT**  
**3472/1**  
**Additional**  
**Mathematics**  
**Kertas 1**  
**Ogos**  
**2017**



**KEMENTERIAN**  
**PENDIDIKAN**  
**MALAYSIA**

**BAHAGIAN PENGURUSAN**  
**SEKOLAH BERASRAMA PENUH**  
**DAN SEKOLAH KECEMERLANGAN**  
**KEMENTERIAN PELAJARAN MALAYSIA**

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**PEPERIKSAAN PERCUBAAN SPM**  
**TINGKATAN 5**

**2017**

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**ADDITIONAL MATHEMATICS**

Paper 1

**MARKING SCHEME**

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This marking scheme consists of 6 printed pages

## MARKING SCHEME

Number	Solution and Mark Scheme	Sub Marks	Total Marks
1	$9x^2 + 12x + 4 = 0$ $(3x + 2)(3x + 2) = 0$ OR SOR = $-\frac{2}{3} + \left(-\frac{2}{3}\right) = -\frac{4}{3}$ or POR = $\left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right) = \frac{4}{9}$	2 B1	2
2 (a)	16 $0 = 2(2)^2 - 12(2) + q$ or $2 + \sqrt{q} = 6$	2 B1	3
(b)	$x < 2$ , $x > 4$	1	
3	$\tan \theta = \frac{2}{3}$  $\cos \theta - \sin \theta = 2 \sin \theta - \cos \theta$	2 B1	2
4 (a)	205 , 209.1 , 213.282 <i>Nota:</i> <i>Kalau calon senaraikan lebih daripada tiga, semua kena betul</i>	1	3
(b)	17,338.78 seconds    or    288.98 minutes    or    4.82 hours    or 4 hours 49 minutes  <i>Nota:</i> Terima $\frac{205(1.02^{50} - 1)}{1.02 - 1}$ $\frac{(3'25'')(1.02^{50} - 1)}{1.02 - 1}$	2 B1	
5 (a)	$r = 20\text{cm}$	1	4
(b)	$\delta r = \frac{q}{40}$  $\frac{\delta r}{q\pi} = \frac{1}{2\pi(*20)}$  $\frac{dA}{dr} = 2\pi r$	3 B2 B1	

6	$V = 322.5$ $V = \frac{3t^2}{2} + 5t \{+c\}$ $\frac{dV}{dt} = 3t + 5 \text{ atau } V = \int 3t + 5 dt \text{ atau } c = 4$	3 B2 B1	<b>3</b>
7	$p = 2, p = -\frac{2}{3}$ $\frac{3p^2}{p+1} = 4$ $\int \frac{1}{3} f(x) dx = \frac{x^2}{x+1}$	3 B2 B1	<b>3</b>
8	$p = -1$ $ 2(4) - 3  = 5$	2 B1	<b>2</b>
9 (a)	570	3	<b>3</b>
(b)	2020  6 tahun atau senarai:  2015: 300, 2016: 330, 2017: 360, 2018: 390, 2019: 420, 2020: 450	2 B1	
10 (a)	$q = 3, p = 6$ (BOTH) $q = 3$ <b>OR</b> $p = 6$  $p = 2q$ <b>OR</b> $16 - q^2 = 7$ <b>OR</b> $\frac{p^2}{4} + 7 = 16$	3 B2 B1	<b>4</b>
(b)	(-3, 16)	1	

11	(a)	$p = 4$ and $q = -\frac{4}{3}$ $p = 4$ or $q = -\frac{4}{3}$	2 B1	<b>4</b>
	(b)	$0.9134 @ \frac{\sqrt{30}}{6}$ $4y^2 = -\frac{4}{3\sqrt{4}} + 4$	2 B1	
12	(a)	150	1	<b>4</b>
	(b)	30	1	
	(c)	4530 $\frac{\sum x^2}{5} - 30^2 = 6$	2 B1	
13	(a)	3 ${}^3C_2 \times {}^3C_3$	2 B1	<b>4</b>
	(b)	144 $4! \times 3!$	2 B1	
14	(a)	$\frac{1}{216}$ $\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6}$	2 B1	<b>4</b>
	(b)	$\frac{25}{7776}$ $\frac{5}{6} \times \frac{1}{6} \times \frac{1}{6} \times \frac{1}{6} \times \frac{1}{6}$	2 B1	
15	(a)	$x = 59.29$ $\frac{x - 56}{\sqrt{120}} = 0.3$	2 B1	<b>4</b>
	(b)	26.14% $P(z \leq -0.639)$	2 B1	

16	(a)	2.095 rad	1	<b>4</b>
	(b)	$565.65 \text{ m}^2$ $\frac{1}{2}(24)^2(2.095) - \frac{1}{2}(6)^2(2.095)$ 24 seen	3 B2 B1	
17		$4pq$ $4 \sin x \cos y \times \cos x \sin y$ $\sin 2x \sin 2y = (2 \sin x \cos x)(2 \sin y \cos y)$	3 B2 B1	<b>3</b>
18		$x = 120^\circ, 240^\circ, 180^\circ$ $(2 \cos x + 1)(\cos x + 1) = 0$ $2(1 - \cos^2 x) - 3 \cos x - 3 = 0$	3 B2 B1	<b>3</b>
19		$\frac{a^3 b}{625}$ $\frac{ab(a^2)}{5^4}$ $(5 \times 7)^x \text{ or } 5^{2(x-2)}$	3 B2 B1	<b>3</b>
20	(a)	2.579	1	<b>3</b>
	(b)	8 $\log_a 8 = \log_a x$	2 B1	
21		$x = \frac{1}{4}$ $(3 + x^2)^{\frac{1}{2}} = (2 - x)$ $\frac{\log_2(2 - x)}{\log_2 \sqrt{x}}$	3 B2 B1	<b>3</b>
22		$(-5, -4)$ $\frac{x+3}{2} = -1 \quad \text{or} \quad \frac{4+y}{2} = 0$ $(-1, 0)$	3 B2 B1	<b>3</b>

23	(a)	3	1	<b>3</b>
	(b)	$3y + x + 16 = 0$ or equivalent $y + 6 = \frac{-1}{3}(x - 2)$	2 B1	
24		$a = \sqrt{10}$ <b>and</b> $b = 3\sqrt{10}$ or equivalent $a = \sqrt{10}$ <b>OR</b> $b = 3\sqrt{10}$ or equivalent $3a = b$ <b>OR</b> $a^2 + b^2 = 100$	3 B2 B1	<b>3</b>
25		$\lambda = \frac{2}{3}$ $A'C = 2\mathbf{i} + 6\mathbf{j}$ or $\overrightarrow{CD} = \mathbf{i} + 3\mathbf{j}$ *accept $\begin{pmatrix} 2 \\ 6 \end{pmatrix}$ or $\begin{pmatrix} 1 \\ 3 \end{pmatrix}$ $A'(3, -4)$	3 B2 B1	

END OF MARKING SCHEME