SULIT
3472/1
Additional
Mathematics
Paper 1
August
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KEMENTERIAN PENDIDIKAN MALAYSIA

BAHAGIAN PENGURUSAN
SEKOLAH BERASRAMA PENUH
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KEMENTERIAN PELAJARAN MALAYSIA

PEPERIKSAAN PERCUBAAN SPM
TINGKATAN 5

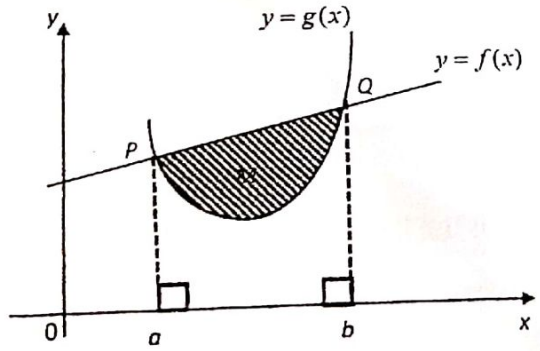
2019

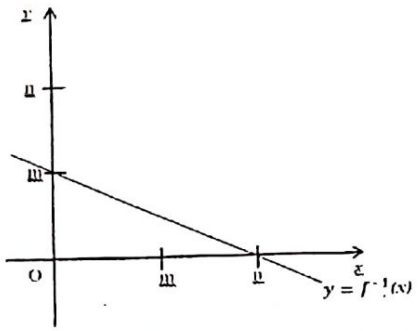
ADDITIONAL MATHEMATICS

Paper 1

MARKING SCHEME

This marking scheme consists of 6 printed pages

Number		Solution and Mark Scheme	Sub Marks	Total Marks
1		$n = 19$ $\frac{n}{2}(2(36) + (n-1)(-4)) = 0$	 B1	2
2		$2x^2 - 3x - 2 \geq 0$ $2x^2 - 3x - 2$ or $(2x-1)(x-2)$	 B1	2
3	(a)	$\frac{26+p}{10}$	1	2
	(b)	30	1	
4		$n=3$ and $p=-6$ $n=3$ or $p=-6$ $n+(6-n)=-\frac{p}{1}$ or $n(6-n)=\frac{9}{1}$	 B2 B1	3
5		$y = -24x + 28$ $-8(3(1)-2)^{-3}(3)$ or $y - 4 = -24(x-1)$	 B3	4
		$-8(3(1)-2)^{-3}(3)$ $-8(3x-2)^{-3}(3)$ or qoutient rule	B2 B1	
6	(a)		1	2
	(b)	$\int_a^b (f(x)-g(x))dx$ or $\int_a^b f(x)dx - \int_a^b g(x)dx$ or $\frac{1}{2}(f(a)+f(b))(b-a) - \int_a^b g(x)dx$	1	

Number		Solution and Mark Scheme	Sub Marks	Total Marks
7		$p = -2$ $\frac{15}{2}p + 6 = 2p - 5$ $(8p - 2) - (\frac{p}{2} - 8)$ $\frac{px^2}{2}$ or $\frac{8x^{-1}}{-1}$	 B3 B2 B1	4
8	(a)	$f^{-1}(0) = m$	1	2
	(b)		1	
9	(a)	RM 585.00 $(25000 - 12000)$ or 13000 or x 0.045	2 B1	4
	(b)	$gf(x) = 0.045\,(x - 12000)$ gf or fg or $0.045(x - 12000)$	2 B1	
10	(a)	44.5	1	4
	(b)	63.25 $Q_3 = 59.5 + \left(\frac{\frac{3}{4}(60) - 39}{16}\right)10$ 59.5 or 16 seen	3 B2 B1	
11	(a)	$k = 17$ $xy = \frac{h}{p}x^2 + k$	2 B1	3
	(b)	$h = -4p$	1	

Number		Solution and Mark Scheme	Sub Marks	Total Marks
12	(a)	360	1	4
	(b)	120	3	
		${}^4P_2 \times {}^3P_1 \times 2 + {}^4P_2 \times {}^4P_1$	B2	
		${}^4P_2 \times {}^3P_1$ or ${}^4P_2 \times {}^4P_1$	B1	
13	(a)	$\frac{31}{105}$	2	4
		$\frac{5}{15} \times \frac{4}{14}$ or $\frac{6}{15} \times \frac{5}{14}$ or $\frac{4}{15} \times \frac{3}{14}$	B1	
	(b)	$\frac{74}{105}$	2	
		$1 - \left[\frac{5}{15} \times \frac{4}{14} + \frac{6}{15} \times \frac{5}{14} + \frac{4}{15} \times \frac{3}{14}\right]$ or equivalent	B1	
14	(a)	$0.5 - h$	1	2
	(b)	$2h$	1	
15	(a)	0.08	2	4
		$P(X < 2) = 0.22$	B1	
	(b)	0.35	2	
		$\frac{1 - 0.08 - 0.14 - 0.08}{2}$ or $\frac{0.78 - 0.08}{2}$	B1	
16	(a)	$(\pi - 1)$ rad	2	4
		$r(\pi - \theta) = r$	B1	
	(b)	68.544 cm^2	2	
		$\frac{1}{2} \times 8^2 \times (\pi - 1)$	B1	

		Solution and Mark Scheme	Sub Marks	Total Marks
17	(a)	$\frac{1}{\sqrt{1-k^2}}$	1	4
	(b)	$\sqrt{1-k^2}$	1	
	(c)	$\sqrt{\frac{1+k}{2}}$	2	
		$kos\,\theta = 1 - 2sin^2\frac{\theta}{2}$	B1	
18		$\frac{q^5}{p}$		3
		$5^{2x+2y-(3x-3y)}$ or $\frac{(5^{2x})\,(5^{2y})}{(5^{3x})\,(5^{3y})}$	B2	
		$5^{2(x+y)}$ or $5^{3(x-y)}$	B1	
19		$y = \frac{\sqrt{10}}{x}$		4
		$x^3y^3 = 10^{\frac{3}{2}}$ or equivalent	B3	
		$\log_{10}\frac{x^4y^2}{\left(\frac{x}{y}\right)} = \frac{3}{2}$ or write as a single log	B2	
		$\log_{10}\left(x\sqrt{y}\right)^4$ or $\log_{10}\frac{x}{y}$ or $\log_{10}x^4 + \log_{10}y^2$ or $\frac{3}{2}\log_{10}10$	B1	
20	(a)	$(0,k)$	1	3
	(b)	$\left(\frac{3}{2h},0\right)$	1	
	(c)	$-\frac{2hk}{3}$	1	
21		$y = \frac{3}{2}x + \frac{17}{2}$		3
		$y - 4 = \frac{3}{2}(x-3)$	B2	
		$m = \frac{3}{\quad}$ or $(3,4)$	B1	

Number		Solution and Mark Scheme	Sub Marks	Total Marks
22		$\frac{1}{\sqrt{a^2+b^2}}\begin{pmatrix} a \\ b \end{pmatrix}$ $\sqrt{a^2+b^2}$	B1	2
23	(a)	$\lambda = \frac{23}{3}$ $2 = (-5+\lambda)\frac{3}{4}$ $AB = 2\boldsymbol{i} - 3\boldsymbol{j}$ or $(-5+\lambda)\boldsymbol{i} - 4\boldsymbol{j}$)	3 B2 B1	4
	(b)	$\frac{AB}{BC} = \frac{3}{4}$	1	
24		20.25 m $-\left(9-\frac{9}{2}\right)^2 + q$ $p = \frac{9}{2}$ Paksi simetri: $x = \frac{9}{2}$	B3 B2 B1	4
25		3 jam 24 minit $\frac{4(1.05^{26}-1)}{1.05-1}$ or 204.45 minit or 3.4076 jam 1.05 seen	B2 B1	3