Additional
Mathematics
Paper 1

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PROGRAM PEMANTAPAN PRESTASI TINGKATAN 5
SPM 2017

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ADDITIONAL MATHEMATICS

MARKING SCHEME

Paper 1

MODULE 1

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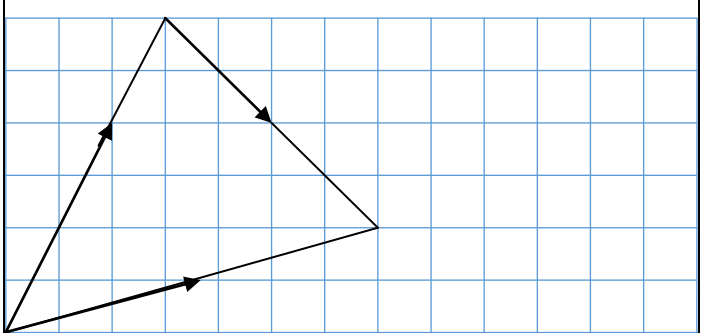
Marking Scheme
Additional Mathematics Paper 1
MODUL 1

Question	Solution/ Marking Scheme	Answer	Marks
1	(*b*) B1 : $f(t)=64$	(*a*) $f(t)=36+7t$ (*b*) $t=4$	1 2
2	(*b*) B1 : $q(x-2)$	(*a*) 1 (*b*) $3x-14$	1 2
3	B2: $m=3$ *or* $k=10$ B1: $\frac{3}{2a+k}=x$ *or* $\frac{2a+k}{3}=\frac{1}{x}$	$m=3$ and $k=10$	3
4	B2: $(3)^2-2(2)$ B1 : $\alpha+\beta=3$ $\alpha\beta=2$ or $(\alpha+\beta)^2-2\alpha\beta$	5	3
5	B2: $(2h-3)^2-4(1)(h^2+1)<0$ B1: $(2h-3)^2-4(1)(h^2+1)$	$h>\frac{5}{12}$	3
6	B2 : $(x+4)(x-3)>0$ B1 : $(x+4)(x-3)$	$x^2+x-12>0$	3
7	(*a*) B1 : 2^{3y} (*b*) B1: $\frac{4^y}{4}$ or 2^{2y}	(*a*) 27 (*b*) $\frac{1}{4}$	3

8	B3: $\frac{4\log_m 2+\log_m 3}{\log_m 2\_\log_m 3}$ B2: $\log_m 2^4+\log_m 3$ or $\log_m 2+\log_m 3$ B1: $\frac{kog_m 48}{\log_m 6}$	$\frac{4x+y}{x+y}$	4
9	(*a*) B1 : $2\sin\theta\cos\theta$ (*b*) B1: $\cos 2\theta=\frac{24}{25}$ or $\cos 2\theta=2\cos^2-1$	(*a*) $\frac{7}{25}$ (*b*) $\sqrt{\frac{49}{50}}$	2 2
10	B2: $180\,000+(n-1)(16\,200)$ B1: $a=180\,000$ or $d=16\,200$	$n=13$	3
11	B2: $a=\frac{20}{7}$, or $d=\frac{20}{7}$ B1: $T_1+T_3+T_5+T_7+T_9+T_{11}+T_{13}=140$ or $s_{14}-(T_1+T_3+T_5+T_7+T_9+T_{11}+T_{13})=160$	$a=\frac{20}{7}$, $d=\frac{20}{7}$ (both)	3
12	B2: $\frac{2}{1-\frac{1}{k}}$ B1: $r=\frac{1}{k}$	$\frac{2k}{k-1}$	3
13	(*b*) B2: $k=5$ *or* $p=\frac{5}{2}$ B1: $5p-2p^2=0$	(*a*) $\frac{y}{x}=k-2x$ (*b*) $k=5$, $p=\frac{5}{2}$	1 3

14	B2: $m_{BC} = -1$ or $y - 5 = -1(x - 0)$ B1: B(0,5) or $m_{AB} = 1$	$y = -x + 5$	3
15	(*b*) B1 : $48h - 96 - 6h^2 = 0$ or $(-h + 4)(h - 4) = 0$	(*a*) straight line (*b*) 4	3
16	B1: Share R	Share R **AND** Largest Dispersion	2
17	 B2: Draw vector $3a$ and $-2b$ correctly B1: Draw vector $3a$ or $-2b$ correctly		3

18	(*b*)) B2: $\overrightarrow{PT}=\frac{1}{4}\overrightarrow{PR}$ or $\overrightarrow{RT}=\frac{3}{4}\overrightarrow{RP}$ B1: $\overrightarrow{QT}=\overrightarrow{QP}+\overrightarrow{PT}$ or $\overrightarrow{QT}=\overrightarrow{QR}+\overrightarrow{RT}$	(*a*) $\vec{PS}=5y$ (*b*) $-9x+\frac{5}{4}y$	1 3
19	B1: $\frac{1}{2}r^2\theta=s^2$ or $\frac{1}{2}sr=s^2$ or $\frac{1}{2}r=s$	1:2	2
20	B2 : $\frac{1}{2}(3+7)\times 3\ -11$ B1: $\frac{1}{2}(3+7)\times 3$	4	3
21	B2: $k(3)-12=0$ B1: $kt-12=0$	4	3
22	(*a*) B1: $\frac{1}{2}\times 3h\times 8h\times \sin 30^\circ$ (*b*) B1: $\frac{dA}{dh}=12h$ or $\frac{dA}{dt}=\frac{dA}{dh}\times\frac{dh}{dt}$	*(a)* $6h^2$ (b) $9h$	2 2

23	(*a*) B1: $\frac{1}{2}\times\frac{1}{2}$ (*b*) B1: $\left(\frac{1}{2}\times\frac{1}{2}\right)$	(*a*) $\frac{1}{4}$ (b) $\frac{1}{2}$	2 2
24	B2: $\left[({}^4P_3\times 2)+({}^3P_2\times 2)\right]\times 2$ B1: ${}^4P_3$ or ${}^3P_2$	120	3
25	B3: $\frac{x-86}{4}=0.4364$ B2: $\mathrm{P(Z}>x)=p(Z>\frac{x-86}{4})=0.4364$ B1 : $\mathrm{P(Z}>x)=\frac{4}{25}$	87.746	4

END OF MARKING SCHEME