PERATURAN PEMARKAHAN
PERCUBAAN SPM TINGKATAN 5 TAHUN 2026
KERTAS 1

No		Peraturan Pemarkahan	Markah	Markah Penuh
Bahagian A				
1		$3.142 - \frac{3.142}{5} - \frac{3.142}{2} = 0.9426$ atau $5(0.9426)$ 4.713	1 1	**2**
2		$\log_{10} y = -\log_{10} x + 2$ $\log_a x + \log_a y = \log_a (xy)$ $\log_{10}(xy) = 2$ *Tunjuk $xy = 10^2$ dan selesaikan $y = \frac{100}{x}$	1 1 1 1	**4**
3	(a)	$S_{12} = \frac{12}{2}[2(1200) + 11(5)]$ 14730	1 1	8
	(b)	$\frac{36}{2}[2(1200) + (36-1)(5)]$ @ $\frac{3}{2}[2(15000) + (3-1)(y)]$ $3y = 46350 - 45000$ $y = 450$	1 1 1	
	(c)	$\frac{60}{2}[2(1200) + (60-1)(5)]$ @ $\frac{5}{2}[2(15000) + (5-1)(450)]$ 80850 & 79500 Skim *A* & 80850 > 79500	 1 1 1	
4	(*a*)	$3(3x-2)^2(3)$ $* [3(3(1)-2)^2(3)] \times m_2 = -1$ $y - (-2) = * -\frac{1}{9}(x-1)$ $9y = -x - 17$ @ setara	1 1 1 1	4

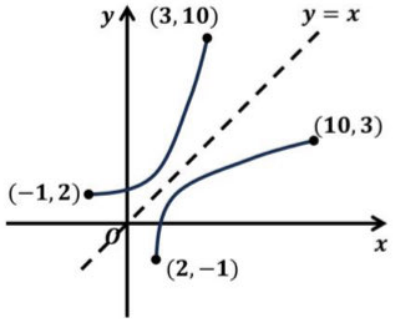
<table>
<tr><th colspan="2">No</th><th>Peraturan Pemarkahan</th><th>Markah</th><th>Markah Penuh</th></tr>
<tr><td rowspan="3">5</td><td>(a)</td><td>
<table>
<tr><td></td><td>$x \le -1$</td><td>$-1 \le x \le \frac{5}{2}$</td><td>$x \ge \frac{5}{2}$</td></tr>
<tr><td>$(x+1)$</td><td>−</td><td>+</td><td>+</td></tr>
<tr><td>$(2x-5)$</td><td>−</td><td>−</td><td>+</td></tr>
<tr><td>$(x+1)(2x-5)$</td><td>+</td><td>−</td><td>+</td></tr>
</table>
$-1 \le x \le \frac{5}{2}$
</td><td>1

1</td><td rowspan="3">7</td></tr>
<tr><td>(b)</td><td>$2x^2 + (-3+m)x - 3 + n = 0$
$\alpha + \beta = \frac{3-m}{2}$ dan $\alpha\beta = \frac{-3+n}{2}$</td><td>1
1</td></tr>
<tr><td>(c)</td><td>$\frac{1}{\alpha} + \frac{1}{\beta} = k$ dan $\left(\frac{1}{\alpha}\right)\left(\frac{1}{\beta}\right) = 2k - 2$
$\frac{3-m}{-3+n} = \frac{1}{-3+n} + 1$
$m = 5 - n$</td><td>1
1
1</td></tr>
<tr><td rowspan="2">6</td><td>(a)</td><td>$14.4 = 8 \times \theta$
1.8</td><td>1
1</td><td rowspan="2">6</td></tr>
<tr><td>(b)</td><td>$8 \times \tan(0.9 \times \frac{180}{\pi})$
$\frac{1}{2} \times 8 \times 10.079$ atau $\frac{1}{2} \times 8^2 \times 1.8$
$2(\frac{1}{2} \times 8 \times 10.079) - \frac{1}{2} \times 8^2 \times 1.8$
23.03</td><td>1
1
1
1</td></tr>
<tr><td rowspan="2">7</td><td>(a)</td><td>(i) $\overrightarrow{OP} = \begin{pmatrix}4\\4\end{pmatrix}$
(ii) $\overrightarrow{QP} = \overrightarrow{QO} + \overrightarrow{OP}$ & $-(6\underset{\sim}{i} - 4\underset{\sim}{j}) + (4\underset{\sim}{i} + 4\underset{\sim}{j})$
$-2\underset{\sim}{i} + 8\underset{\sim}{j}$</td><td>1
1
1</td><td rowspan="2">7</td></tr>
<tr><td>(b)</td><td>$\overrightarrow{KM} = \overrightarrow{KL} + \overrightarrow{LM}$ & $4\underset{\sim}{i} - 7\underset{\sim}{j}$
$\widehat{KM} = \frac{4\underset{\sim}{i} - 7\underset{\sim}{j}}{\sqrt{(4)^2 + (-7)^2}}$
$\frac{4}{\sqrt{65}}\underset{\sim}{i} - \frac{7}{\sqrt{65}}\underset{\sim}{j}$</td><td>1
1
1</td></tr>
</table>

No		Peraturan Pemarkahan	Markah	Markah Penuh
8	(*a*)	$\left(\frac{3(-2)+2(8)}{3+2}, \frac{3(5)+2(-5)}{3+2}\right)$	1	6
		$(2,1)$ dan tidak	1	
	(*b*)	$m_1 = \frac{1-(-1)}{2-(-4)}$ &		
		Guna $*m_1 \times m_2 = -1$	1	
		$m_2 = -3$		
		$y - 1 = \frac{1}{3}(0-2)$ @ 1= $\frac{1}{3}(2) + c$ & ***selesaikan untuk c***	1	
		$y = \frac{1}{3}$ @ $c = \frac{1}{3}$	1	
		$y = -3x + \frac{1}{3}$	1	
9	(*a*)	-15	1	5
	(*b*)	$\int_1^2 h(x)dx + \int_1^2 kx\,dx = 11$	1	
		$5 + \left[\frac{kx^2}{2}\right]_1^2 = 11$	1	
		$5 + \left[\frac{k(2)^2}{2} - \frac{k(1)^2}{2}\right] = 11$	1	
		4	1	

No		Peraturan Pemarkahan	Markah	Markah Penuh
10	(*a*)	$\frac{8(1.5^n-1)}{1.5-1}$ $16(1.5^n-1)$	1 1	5
	(*b*)	Ganti n = 3 atau n= 7 ke dalam $*S_n$ $16(1.5^7-1)$ @ $\frac{8(1.5^7-1)}{1.5-1}$ @ $16(1.5^3-1)$ @ $\frac{8(1.5^3-1)}{1.5-1}$ Cari S_7 - S_3 $16(1.5^7-1)-16(1.5^3-1)$ @ $\frac{8(1.5^7-1)}{1.5-1}-\frac{8(1.5^3-1)}{1.5-1}$ 219.38	1 1 1	
11	(*a*)	Guna ${}^nP_r=\frac{n!}{(n-r)!}$ $\frac{(n+2)(n+2-1)(n+2-2)(n+2-3)!}{(n+2-3)!}$ $\frac{(n+2)(n+2-1)(n+2-2)(n+2-3)!}{(n+2-3)!}=30n$ Mencari nilai n 4	1 1 1 1	7
	(*b*)	(i) 24 (ii) Tunjuk ${}^3C_2\times {}^4C_1$ atau ${}^3C_3\times {}^4C_0$ 13 cara	1 1 1	
12	(*a*)	0.2	1	4
	(*b*)	(i) 0.8 (ii) 0.15 + 0.2 0.35	1 1 1	

Bahagian B				
No		**Peraturan Pemarkahan**	**Markah**	**Markah Penuh**
13	(*a*)	$7^n(7^3) + 7^2\,(7^n) - 2(7^n)$	1	8
		$7^n\,(7^3 + 7^2\, - 2)$	1	
		$7^n\,(390)$	1	
		$\frac{390}{21} = \frac{130}{7}$ @ 18.57 dan Tidak	1	
	(*b*)	$\frac{5+\sqrt{2}}{\sqrt{32}-2\sqrt{2}} \times \frac{\sqrt{32}+2\sqrt{2}}{\sqrt{32}+2\sqrt{2}}$	1	
		$\frac{5\sqrt{16\times 2}+10\sqrt{2}+\sqrt{64}+2(2)}{32-8}$	1	
		*$\sqrt{16\times 2}$ mesti ditunjukkan		
		$\frac{1}{2}+\frac{5}{4}\sqrt{2}$	1	
		$a = \frac{1}{2}\,, b = \frac{5}{4}\,, c = 2$	1	
14	(*a*)	Sudut rujukan = 45°	1	8
		2θ = 45°, 225°, 405°, 585°	1	
		$\theta = 112.5$	1	
	(*b*)	$\sin x = \frac{\sqrt{p^2-1}}{p}$	1	
		$\frac{2\sqrt{p^2-1}}{p^2}$	1	
	(*c*)	<u>Guna rumus sudut majmuk</u>		
		sin 15° = sin(45° - 30°) @ sin(60° - 45°)	1	
		$sin45°kos30° - kos45°sin30°$ @		
		$\left(\frac{1}{\sqrt{2}}\right)\left(\frac{\sqrt{3}}{2}\right) - \left(\frac{1}{\sqrt{2}}\right)\left(\frac{1}{2}\right)$	1	
		$\frac{\sqrt{3}-1}{2\sqrt{2}}$	1	

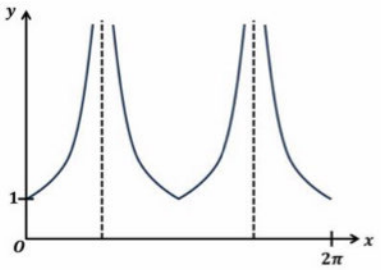
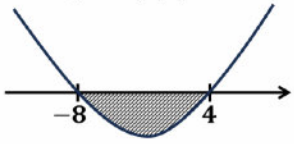
No		Peraturan Pemarkahan	Markah	Markah Penuh
15	(*a*)	$f^{-1}(x) = x + 4$	1	8
	(*b*)	$x = \dfrac{y+1}{6}$ $g(y) = \frac{3}{1-6\left(\frac{y+1}{6}\right)}$ $g(x) = -\dfrac{3}{x}$ $g^2(x) = x \quad \& \quad g^3(x) = -\frac{3}{x} \quad \& \quad g^4(x) = x$ $g^{2n-1}(x) = -\dfrac{3}{x}$	1 1 1 1 1	
	(*c*)	 $-1 \leq y \leq 3$	1 1	

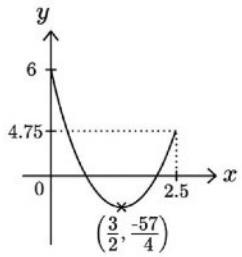
PERATURAN PEMARKAHAN

PEPERIKSAAN PERCUBAAN SPM TINGKATAN 5 TAHUN 2026

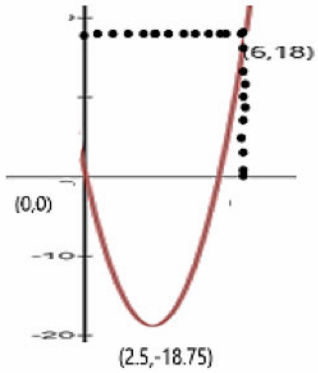
KERTAS 2

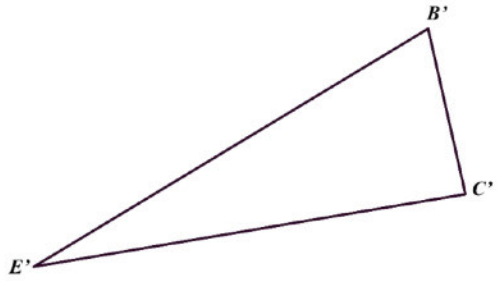
No		Peraturan Pemarkahan	Markah	Markah Penuh
Bahagian A				
1		Menyamakan pekali satu sebutan untuk menghapuskan satu anu atau mengungkapkan satu pembolehubah sebagai perkara rumus Menghapuskan satu anu Menghapuskan anu yang kedua $x = 2$ @ $y = -5$ @ $z = -1$ $x = 2$ & $y = -5$ @ $x = 2$ & $z = -1$ @ $y = -5$ & $z = -1$	1 1 1 1 1	**5**
2	(a)(i)	$* m^0 = 1$ & $0\ log_\beta * m = log_\beta 1$ $log_\beta 1 = 0$ Nota : Terima apa-apa pembolehubah selain m kecuali β	1 1	**7**
	(a)(ii)	$\sqrt{(4-2\sqrt{3})^2 + (4+2\sqrt{3})^2}$ $\sqrt{16-8\sqrt{3}-8\sqrt{3}+4(3)+16+8\sqrt{3}+8\sqrt{3}+4(3)}$ $\sqrt{4\times 14}$ & $2\sqrt{14}$	1 1 1	
	(b)(i)	250.78	1	
	(b)(ii)	$925 = 37(2.15)^t$ atau $\log_{10} 25 = t\ (\log_{10} 2.15)$ 4.205	1 1	
3	(a)	$g(x) = (x-1)^2 - 2(x-1) - 3$ $g(x) = x^2 - 4x$	1 1	**7**
	(b)	$(x-4)(x+2) = 0$ $x = 4, x = -2$	1 1	
	(c)	$x^2 - 2x - 3 = 2\ (x^2 - 4x) - 24$ $\frac{-(-6)\pm\sqrt{(-6)^2-4(1)(-21)}}{2(1)}$ $x = 8.477\ atau\ x = -2.477$	1 1 1	
4	(a) (i)	Guna $sin^2 A + kos^2 A = 1$ $\frac{2sin\ A}{sin^2 A}$ $2kosekA$	1 1 1	**9**
	(a) (ii)	$SinA = \frac{1}{2}$ $A = \frac{1}{6}\pi, \frac{5}{6}\pi$	1 1	

No		Peraturan Pemarkahan	Markah	Markah Penuh
	(b)	Bentuk graf Tan (paksi -paksi guna pembaris) 1 kitaran (paksi-paksi, asalan dan 2π perlu dilabel) Mutlak Anjakan 1 unit ke atas  	1 1 1 1	
5	(a)	$k^2 - 4(8-k)(1) < 0$  $(k+8)(k-4) < 0$ dan kaedah lakaran graf atau setara Julat/ *Range*:$-8 < k < 4$	1 1 1	**7**
	(b)	$p = -3$ dan $q = -11$	1	
	(c)	$f(x) = -(x^2 - 14x + \left(-\frac{14}{2}\right)^2 - \left(-\frac{14}{2}\right)^2 + 33)$ $f(x) = -(x-7)^2 + 16$ (7,16)	1 1 1	
6	(a)	(i) $\overrightarrow{QS} = \overrightarrow{QP} + \overrightarrow{PS}$ dan $25\underline{v} - 10\underline{u}$ (ii) $10\underline{v} + \frac{2}{5}(25\underline{v} - 10\underline{u})$ $6u + 10\underline{v}$	1 1 1	
	(b)	$\overrightarrow{PR} = 9\underline{u} + 15\underline{v}$ $\frac{1}{2}\overrightarrow{PT} = 3\underline{u} + 5\underline{v}$ atau $\frac{1}{3}\overrightarrow{PR} = 3\underline{u} + 5\underline{v}$ $\frac{1}{2}\overrightarrow{PT} = \frac{1}{3}\overrightarrow{PR}$ atau $PT : PR = 2:3$ $PT : TR = 2:1$	1 1 1 1	**7**
7	(a)	$x = \int -2y\,dy = \frac{-2y^2}{2} + c$ $x = -y^2 + c$ $(5,0): 0 + c \Rightarrow c = 5$ Persamaan lengkung : $x = -y^2 + 5$	1 1 1	
	(b)	$\frac{1}{2}\pi\left[5 - \frac{x^2}{2}\right]_1^5$ & $\frac{1}{2}\pi\left[\left(5(5) - \frac{5^2}{2}\right) - \left(5(1) - \frac{1^2}{2}\right)\right]$ $\frac{1}{2} \times \pi(2)^2(1)$ @ $\frac{1}{2} \times \pi[4x]_0^1$ & $\frac{1}{2}\pi[4(1) - 4(0)]$ $\frac{1}{2}\pi\left[\left(5(5) - \frac{5^2}{2}\right) - \left(5(1) - \frac{1^2}{2}\right)\right] + \frac{1}{2}\pi[4(1) - 4(0)]$ 6π	1 1 1 1	**7**

No		Peraturan Pemarkahan	Markah	Markah Penuh
		Bahagian B		
8	(a)	$\frac{dy}{dx} = 12x^2 - 6x - 18 = 0$	1	**10**
		$x = \frac{3}{2}, x = -1$	1	
		$y = -\frac{57}{4}, y = 17$	1	
		$\frac{d^2y}{dx^2} = 24x - 6$		
		$at\ x = \frac{3}{2},\ \frac{d^2y}{dx^2} = 24(\frac{3}{2}) - 6\ , \frac{d^2y}{dx^2} = 30 > 0$ @		
		$at\ x = -1,\ \frac{d^2y}{dx^2} = 24(-1) - 6\ , \frac{d^2y}{dx^2} = -30 < 0$	1	
		$\left(\frac{3}{2}, -\frac{57}{4}\right)$ *ialah titik minimum* ***DAN*** $(-1,17)$ *ialah titik maksimum*	1	
			1	
	(b) (i)	$r^2 = -h^2 + 12h$	1	
		$A = \pi(12h - h^2)$	1	
	(b) (ii)	$\frac{dA}{dt} = (12\pi - 2\pi(5)) \times 0.4$	1	
		0.8π @ $\frac{4}{5}\pi$	1	
9	(a)	$\frac{2(-1) + 1(x)}{1 + 2} = 1$@$\frac{2(2) + 1(y)}{1 + 2} = 4$	1	10
		$(5,8)$	1	
	(b) (i)	$Guna\ \frac{1}{2}\|(\ ) - (\ )\| = 33$		
		$\frac{1}{2}\|((-1) * (8) + * (5)(-2) + (k)(2)) - ((2) * (5) + * (8)(k) + (-2)(-1)\| = 33$	1	
		$k = 6$	1	

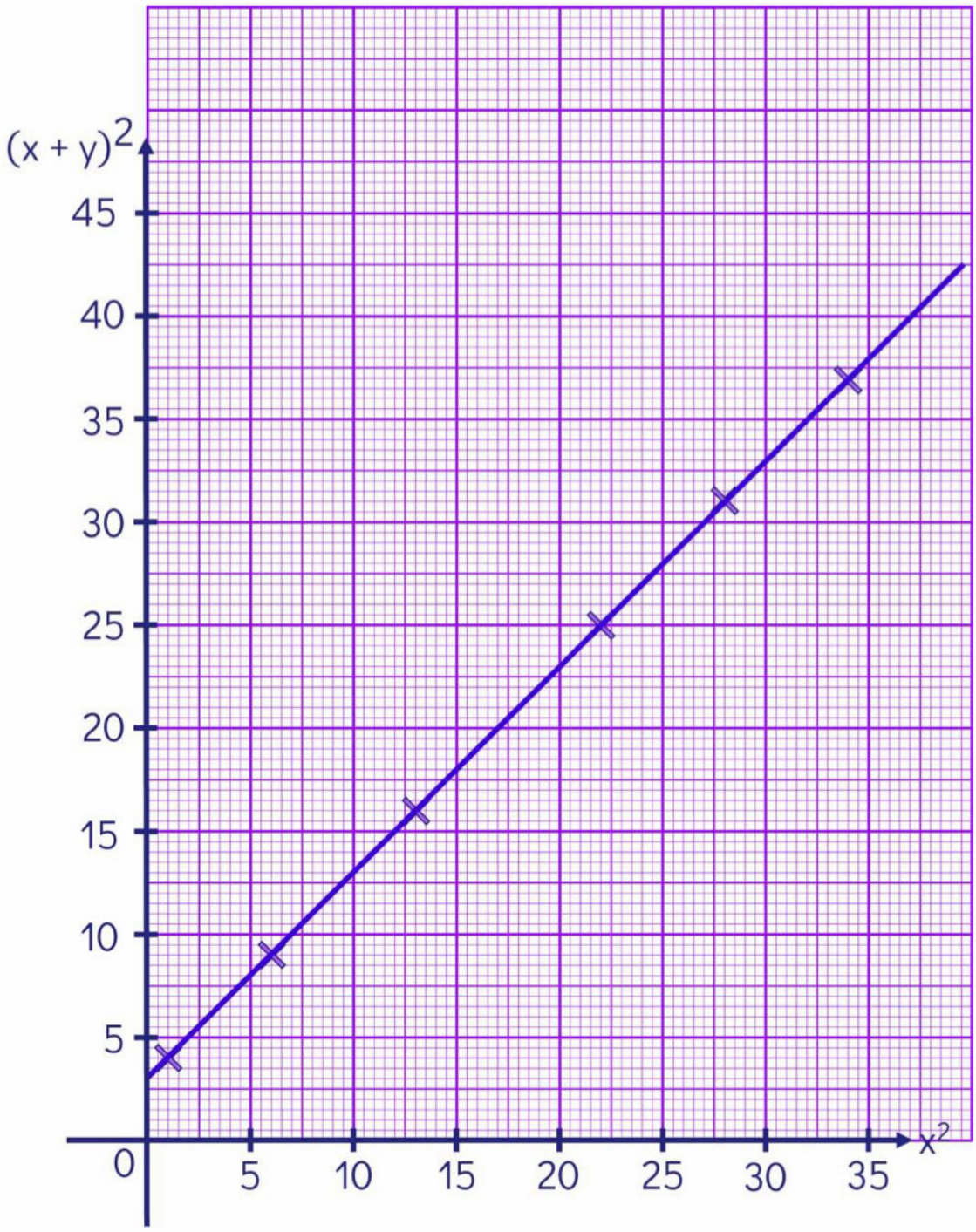
No		Peraturan Pemarkahan	Markah	Markah Penuh
	(b) (ii)	$m = \frac{4-(-2)}{1-6}$ &		
		$Guna\ m_1 \times m_2 = -1$		
		_____		
		$m = \frac{5}{6}$	1	
		$Ganti\ P(1,4) ke\ dalam\ y = * \left(\frac{5}{6}\right)x + c \quad ATAU$		
		$Ganti\ P(1,4) ke\ dalam\ y - y_1 = * \left(\frac{5}{6}\right)(x - x_1)$	1	
		$y = \frac{5}{6}x + \frac{19}{6}$	1	
	(c)	$\sqrt{(x-(-1))^2 + (y-2)^2} @ \sqrt{(x-5)^2 + (y-8)^2}$	1	
		$\sqrt{(x-(-1))^2 + (y-2)^2} = \sqrt{(x-5)^2 + (y-8)^2}$	1	
		$x + y - 7 = 0$	1	
10	(a)	$(x+y)^2$ | 4 | 9 | 16 | 25 | 31.02 | 36.97	1	
	(b)	Paksi-paksi betul & skala seragam dari titik pertama hingga titik terakhir		
		Sekurang-kurangnya 1* titik diplot betul	1	
		6* titik diplot dengan betul	1	
		Garis lurus penyuaian terbaik sekurang-kurangnya 5* titik diplot	1	
	(c) (i)	$(x+y)^2 = kx + h$	1	10
		Guna $*m = k$	1	
		$k = 1$	1	
		$h = 3$	1	
	(c) (ii)	Menggantikan nilai daripada graf $(15+y)^2 = 18$	1	
		Menunjukkan penyelesaian $15 + y = \pm\sqrt{18}$ dan jawapan -10.76 atau -19.24	1	
11	(a) (i)	$z = \frac{2.5 - 2.2}{0.7}$	1	
		$P(Z \geq 0.4286) = 0.3340$	1	
		*Tidak terima 0.3341		10
	(a) (ii)	$P(Z < \frac{m - 2.2}{0.7}) = 0.26$	1	

No		Peraturan Pemarkahan	Markah	Markah Penuh
		$\frac{m-2.2}{0.7} = -0.643$	1	
		$m = 1.7499$	1	
	(b) (i)	$q = 0.75$	1	
		${}^{n}C_{1}(0.25)^{1}(0.75)^{n-1} = 10\ ({}^{n}C_{0}(0.25)^{0}(0.75)^{n})$	1	
		$n = 30$	1	
	(b) (ii)	$\sigma = \sqrt{30 \times 0.25 \times 0.75}$	1	
		$\sigma = 2.372$	1	
Bahagian C				
12	(a) (i)	$25p + 5q = 0$ atau $15 = 10p + q$	1	
		$p = 3\ dan\ q = -15$	1	
	(a) (ii)	$s = t^3 - \frac{15t^2}{2}$	1	
		$(t^2)(t - \frac{15}{2}) = 0$	1	
		$t = \frac{15}{2}$	1	
	(b)	Bentuk graf ∪	1	
		Label titik $= * (2.5, -18.75)$, titik $* (0,0), * (6,18)$ dilihat	1	
				**10**
	(c)	Ganti t = 5 atau t = 6 ke dalam s	1	
		$\lvert s_5 \rvert + s_6 - s_5$	1	
		71	1	
13	(a)	Guna $I = \frac{Q_1}{Q_0} \times 100$ dan nilai $x\ @\ y\ @\ z$	1	
		$x = 5.40$		
		$y = 96$		
		$z = 4.80$	2	
		*Dua sahaja nilai betul, 1 markah		
	(b)	$\bar{I} = \frac{(135 \times 37) + (115 \times 33) + (96 \times 16) + (150 \times 14)}{37 + 33 + 16 + 14}$	1,1	
		124.26	1	10
	(c)	$I_{24/22} = \frac{160 \times 100}{124.26}$	1	
		128.76	1	
		$\frac{P_{24}}{2.00} \times 100 = 128.76$	1	
		2.58	1	

No		Peraturan Pemarkahan	Markah	Markah Penuh
14	(a) (i)	$\sqrt{74.9376}$ // 8.657	1	10
		Guna petua kosinus		
		$\left(\sqrt{74.9376}\right)^2 = 9.403^2 + \left(\sqrt{135}\right)^2 - 2(9.403)\left(\sqrt{135}\right)\text{kos}\angle BED$	1	
		$47.20°$	1	
	(a) (ii)	Guna petua sinus		
		$\frac{CE}{\sin 106.33°} = \frac{6.24}{28.19°}$	1	
		$12.68°$	1	
	(a) (iii)	Guna rumus luas		
		$\frac{1}{2}(9.403)\left(\sqrt{135}\right)\sin* 47.20°$	1	
		$\frac{1}{2}(9.403)h = \frac{1}{2}\left(\frac{1}{2}(9.403)\left(\sqrt{135}\right)\sin* 47.20°\right)$	1	
		20.04	1	
	(b) (i)		1	
		Nota 1. $\angle C'B'E'$ adalah tirus Sisi-sisi dilukis menggunakan alat tepi lurus.		
	(b) (ii)	78.14	1	
15	(a)	I: $y - x \geq 10$	1	10
		II : $x \geq \frac{y}{10.}$ $atau$ $10x \geq y$	1	
		III : $3700\,x + 1800y \leq 54\,000$	1	
	(b)	Lukis dengan betul sekurang-kurangnya satu garis lurus dari *ketaksamaan yang melibatkan x dan y	1	
		Lukis dengan betul semua *garis lurus dari *ketaksamaan yang melibatkan x dan y	1	
		Rantau dilorek dengan betul	1	
	(c)	$x = \frac{10}{100}y$, $y = 10\,x$		

No		Peraturan Pemarkahan	Markah	Markah Penuh
		Titik maksimum (2,20) Maka bilangan maksimum pekerja = $2 + 20 = 22$	1	
	(d)	Tulis dan lukis $k = 25\,x + 10\,y$ $25(3) + 10\,(24)$ 315	1 1 1	

Soalan 11 (b)



Soalan 15 (b)