

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

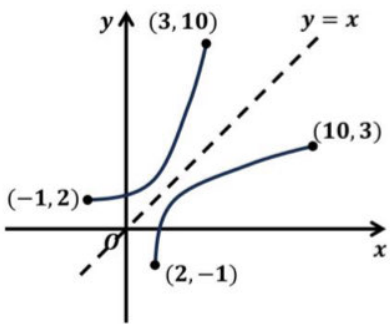
No		Peraturan Pemarkahan	Markah	Markah Penuh																
5	(a)	<table><tr><td></td><td>$x \leq -1$</td><td>$-1 \leq x \leq \frac{5}{2}$</td><td>$x \geq \frac{5}{2}$</td></tr><tr><td>$(x + 1)$</td><td>–</td><td>+</td><td>+</td></tr><tr><td>$(2x - 5)$</td><td>–</td><td>–</td><td>+</td></tr><tr><td>$(x + 1)(2x - 5)$</td><td>+</td><td>–</td><td>+</td></tr></table>		$x \leq -1$	$-1 \leq x \leq \frac{5}{2}$	$x \geq \frac{5}{2}$	$(x + 1)$	–	+	+	$(2x - 5)$	–	–	+	$(x + 1)(2x - 5)$	+	–	+	1	7
			$x \leq -1$	$-1 \leq x \leq \frac{5}{2}$	$x \geq \frac{5}{2}$															
		$(x + 1)$	–	+	+															
		$(2x - 5)$	–	–	+															
	$(x + 1)(2x - 5)$	+	–	+																
$-1 \leq x \leq \frac{5}{2}$	1																			
(b)	$2x^2 + (-3 + m)x - 3 + n = 0$	1																		
	$\alpha + \beta = \frac{3-m}{2}$ dan $\alpha\beta = \frac{-3+n}{2}$	1																		
(c)	$\frac{1}{\alpha} + \frac{1}{\beta} = k$ dan $\left(\frac{1}{\alpha}\right)\left(\frac{1}{\beta}\right) = 2k - 2$	1																		
	$\frac{3-m}{-3+n} = \frac{1}{-3+n} + 1$	1																		
	$m = 5 - n$	1																		
6	(a)	$14.4 = 8 \times \frac{\theta}{1.8}$	1	6																
			1																	
	(b)	$8 \times \tan(0.9 \times \frac{180}{\pi})$	1																	
		$\frac{1}{2} \times 8 \times 10.079$ atau $\frac{1}{2} \times 8^2 \times 1.8$	1																	
		$2(\frac{1}{2} \times 8 \times 10.079) - \frac{1}{2} \times 8^2 \times 1.8$	1																	
23.03	1																			
7	(a)	(i) $\overrightarrow{OP} = \begin{pmatrix} 4 \\ 4 \end{pmatrix}$	1	7																
		(ii) $\overrightarrow{QP} = \overrightarrow{QO} + \overrightarrow{OP}$ & $-(6\mathbf{i} - 4\mathbf{j}) + (4\mathbf{i} + 4\mathbf{j})$ $-2\mathbf{i} + 8\mathbf{j}$	1																	
					1															
	(b)	$\overrightarrow{KM} = \overrightarrow{KL} + \overrightarrow{LM}$ & $4\mathbf{i} - 7\mathbf{j}$	1																	
		$\widehat{KM} = \frac{4\mathbf{i} - 7\mathbf{j}}{\sqrt{(4)^2 + (-7)^2}}$	1																	
$\frac{4}{\sqrt{65}}\mathbf{i} - \frac{7}{\sqrt{65}}\mathbf{j}$		1																		

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)	$m_1 = \frac{1 - (-1)}{2 - (-4)}$ & <u>Guna *$m_1 \times m_2 = -1$</u> $m_2 = -3$	1	
		$y - 1 = \frac{1}{3}(0 - 2)$ @ $1 = \frac{1}{3}(2) + c$ & <i>selesaikan untuk c</i> $y = \frac{1}{3}$ @ $c = \frac{1}{3}$ $y = -3x + \frac{1}{3}$	1 1 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	
		$5 + \left[\frac{k(2)^2}{2} - \frac{k(1)^2}{2}\right] = 11$ 4	1 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)	$7^n(7^3) + 7^2(7^n) - 2(7^n)$ $7^n(7^3 + 7^2 - 2)$ $7^n(390)$ $\frac{390}{21} = \frac{130}{7} @ 18.57$ dan Tidak	1 1 1 1	8
	(b)	$\frac{5 + \sqrt{2}}{\sqrt{32} - 2\sqrt{2}} \times \frac{\sqrt{32} + 2\sqrt{2}}{\sqrt{32} + 2\sqrt{2}}$ $\frac{5\sqrt{16 \times 2} + 10\sqrt{2} + \sqrt{64} + 2(2)}{32 - 8}$ $*\sqrt{16 \times 2}$ mesti ditunjukkan $\frac{1}{2} + \frac{5}{4}\sqrt{2}$ $a = \frac{1}{2}, b = \frac{5}{4}, c = 2$	1 1 1 1	
14	(a)	Sudut rujukan = 45° $2\theta = 45^\circ, 225^\circ, 405^\circ, 585^\circ$ $\theta = 112.5$	1 1 1	8
	(b)	$\sin x = \frac{\sqrt{p^2-1}}{p}$ $\frac{2\sqrt{p^2-1}}{p^2}$	1 1	
	(c)	<u>Guna rumus sudut majmuk</u> $\sin 15^\circ = \sin(45^\circ - 30^\circ) @ \sin(60^\circ - 45^\circ)$ $\sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ @$ $\left(\frac{1}{\sqrt{2}}\right)\left(\frac{\sqrt{3}}{2}\right) - \left(\frac{1}{\sqrt{2}}\right)\left(\frac{1}{2}\right)$ $\frac{\sqrt{3}-1}{2\sqrt{2}}$	1 1 1	

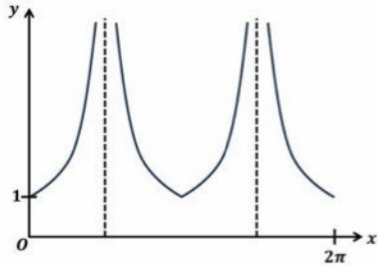
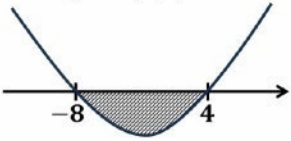
No		Peraturan Pemarkahan	Markah	Markah Penuh
15	(a)	$f^{-1}(x) = x + 4$	1	8
	(b)	$x = \frac{y + 1}{6}$	1	
		$g(y) = \frac{3}{1 - 6\left(\frac{y+1}{6}\right)}$	1	
		$g(x) = -\frac{3}{x}$	1	
		$g^2(x) = x \quad \& \quad g^3(x) = -\frac{3}{x} \quad \& \quad g^4(x) = x$	1	
		$g^{2n-1}(x) = -\frac{3}{x}$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

PERATURAN PEMARKAHAN

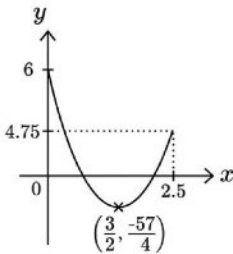
PEPERIKSAAN PERCUBAAN SPM TINGKATAN 5 TAHUN 2026

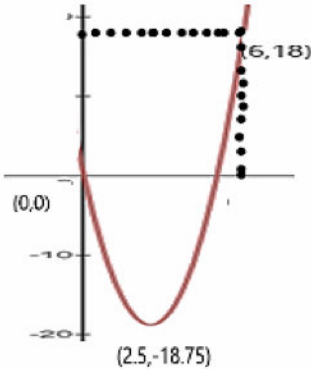
KERTAS 2

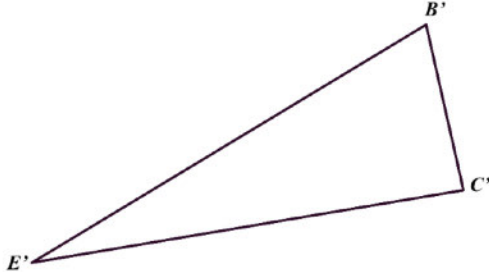
No	Peraturan Pemarkahan	Markah	Markah Penuh
Bahagian A			
1	Menyamakan pekali satu sebutan untuk menghapuskan satu anu atau mengungkapkan satu pembolehubah sebagai perkara rumus Menghapuskan satu anu Menghapuskan anu yang kedua $x = 2 @ y = -5 @ z = -1$ $x = 2 \& y = -5 @ x = 2 \& z = -1 @$ $y = -5 \& z = -1$	1 1 1 1	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 $\sin^2 A + \cos^2 A = 1$ $\frac{2\sin A}{\sin^2 A}$ $2\cos A$	1 1 1	9
	(a) (ii) $\sin A = \frac{1}{2}$ $A = \frac{1}{6}\pi, \frac{5}{6}\pi$	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	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) $10\underline{v} + \frac{2}{5} (25\underline{v} - 10\underline{u})$ $6\underline{u} + 10\underline{v}$	1 1 1	7
	(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	(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	7
	(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	



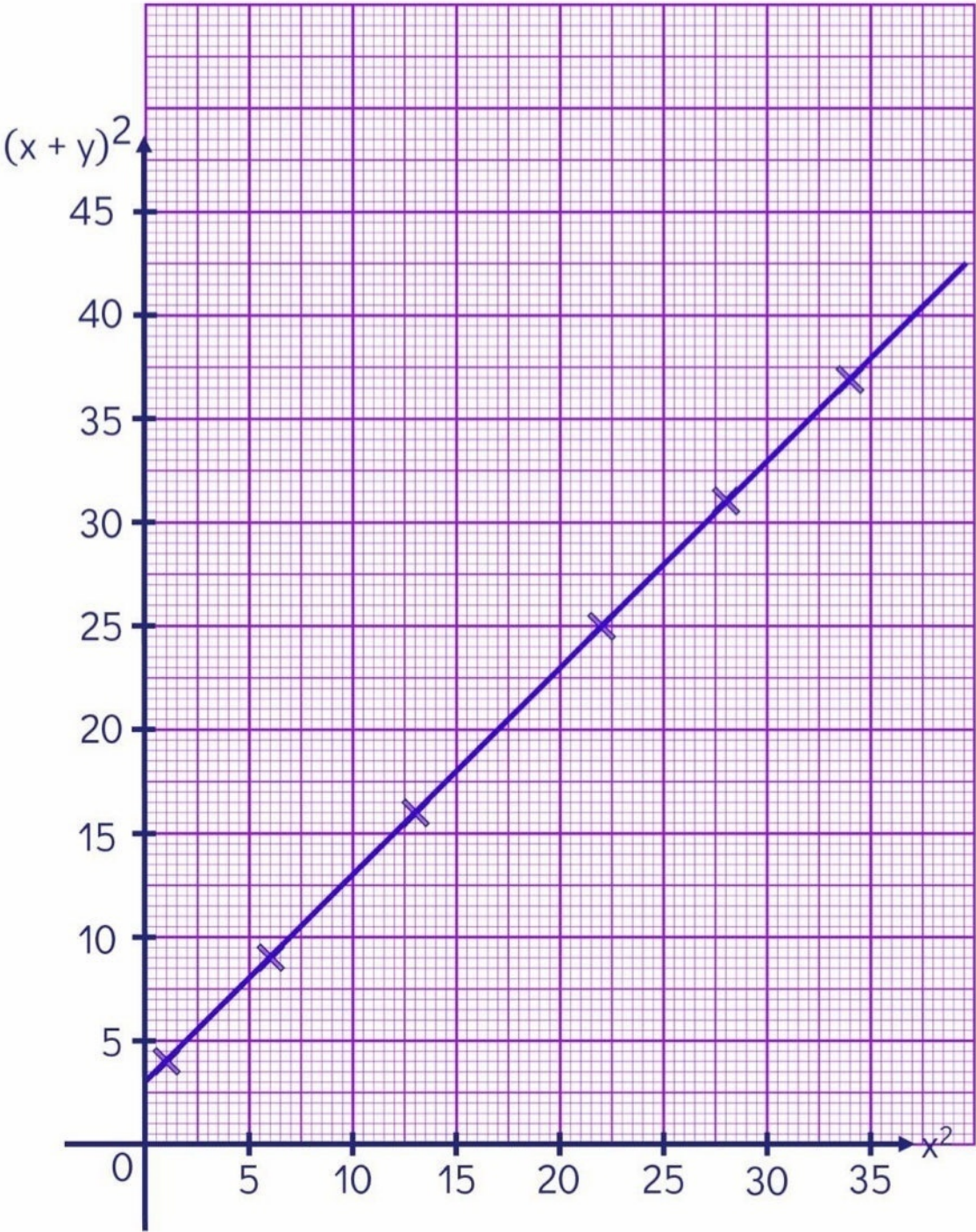
No	Peraturan Pemarkahan		Markah	Markah Penuh	
Bahagian B					
8	(a)	$\frac{dy}{dx} = 12x^2 - 6x - 18 = 0$	1	10	
		$x = \frac{3}{2}, x = -1$	1		
		$y = -\frac{57}{4}, y = 17$	1		
		$\frac{d^2y}{dx^2} = 24x - 6$			
		$at\ x = \frac{3}{2}, \frac{d^2y}{dx^2} = 24(\frac{3}{2}) - 6, \frac{d^2y}{dx^2} = 30 > 0 \quad @$			
		$at\ x = -1, \frac{d^2y}{dx^2} = 24(-1) - 6, \frac{d^2y}{dx^2} = -30 < 0$	1		
		$(\frac{3}{2}, -\frac{57}{4})$ 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		
		$0.8\pi @ \frac{4}{5}\pi$	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		
	$\frac{m - 2.2}{0.7} = - 0.643$ $m = 1.7499$	1 1			
(b) (i)	$q = 0.75$ ${}^nC_1(0.25)^1(0.75)^{n-1}=10 ({}^nC_0(0.25)^0(0.75)^n)$ $n = 30$	1 1 1			
(b) (ii)	$\sigma = \sqrt{30 \times 0.25 \times 0.75}$ $\sigma = 2.372$	1 1			
Bahagian C					
12	(a) (i)	$25p + 5q = 0$ atau $15 = 10p + q$ $p = 3 \text{ dan } q = -15$	1 1	10	
	(a) (ii)	$s = t^3 - \frac{15t^2}{2}$ $(t^2)(t - \frac{15}{2}) = 0$ $t = \frac{15}{2}$	1 1 1		
	(b)	Bentuk graf U Label titik =* (2.5, -18.75), titik * (0,0),* (6,18) dilihat 	1 1		
	(c)	Ganti t = 5 atau t = 6 ke dalam s $ s_5 + s_6 - s_5$ 71	1 1 1		
	13	(a)	Guna $I = \frac{Q_1}{Q_0} \times 100$ dan nilai x @ y @ z $x = 5.40$ $y = 96$ $z = 4.80$ *Dua sahaja nilai betul, 1 markah		1 2
(b)		$\bar{I} = \frac{(135 \times 37) + (115 \times 33) + (96 \times 16) + (150 \times 14)}{37 + 33 + 16 + 14}$ 124.26	1,1 1		
(c)		$I_{24/22} = \frac{160 \times 100}{124.26}$ 128.76 $\frac{P_{24}}{2.00} \times 100 = 128.76$ 2.58	1 1 1 1		

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

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

Soalan 11 (b)



Soalan 15 (b)

