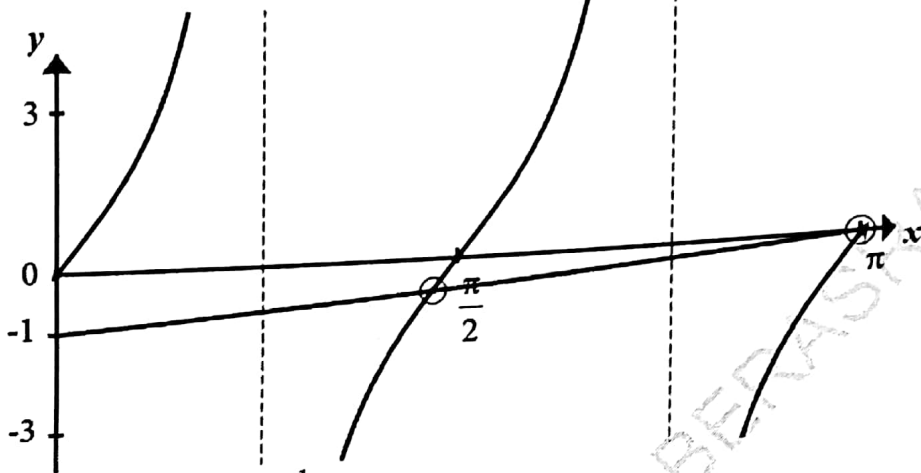


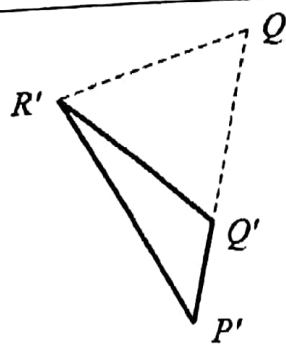
Number	Solution & Marking Scheme	Sub Marks	Full Marks
1	(a) $2m - 1 = 3$ or equivalent $m = 2$	K1 N1	5
	(b) $g(2x - 1) = 4x + 3$ $g(y) = 4\left(\frac{y+1}{2}\right) + 3$ or equivalent $g(x) = 2x + 5$	P1 K1 N1	
2	(a) $3^{4-m} = \frac{3^4}{3^m}$ or $3^{3-m} = \frac{3^3}{3^m}$ $\frac{1}{3^m}(3^4 - 3^2) = 6$ $m = 2$	K1 K1 N1	7
	(b) $2 \log_2(x - y) = \log_2(x - y)^2$ or $4 = \log_2 2^4$ $\log_2 \frac{(x - y)^2}{x}$ or $\log_2 2^4(y)$ $(x - y)^2 = 16xy$ $x^2 - y^2 = 18xy$	K1 K1 K1 N1	

Number	Solution & Marking Scheme	Marks	Marks
3	(a) $6 \sin x \cos x = 3 \sin 2x$ OR $\cos^2 x - \sin^2 x = \cos 2x$ $\frac{3 \sin 2x}{\cos 2x} = 3 \tan 2x$	K1 N1	
	(b) (i)  Shape of $\tan x$ graph Amplitud and cycle	P1 P1 N1	
	(b) (ii) $y = \frac{2x}{\pi} - 1$ Plot straight line $y = \frac{2x}{\pi} - 1$ No of solution 2	K1 N1	7
4	$x^2 + y^2 = 25^2$ $5x + 2y + 50 = 133$ $x = \frac{83 - 2y}{5}$ $y = \frac{83 - 5x}{2}$ $x^2 + \left(\frac{83 - 5x}{2}\right)^2 = 25^2$ $\left(\frac{83 - 2y}{5}\right)^2 + y^2 = 25^2$ $(x - 7)(29x - 627) = 0$ $(y - 24)(29y + 364) = 0$ $x = 7,$ $y = 24$ 588 cm^3	N1 N1 P1 K1 K1 N1 N1	7

Number	Solution & Marking Scheme	Sub Marks	Full Marks
5 (a)	$6 = \frac{3+5+8+6+x+8+10+y+3+5}{10}$ $x+y=12$	K1 N1	
5 (b)	$\sum x^2 = 3^2 + 5^2 + 8^2 + 6^2 + 8^2 + 10^2 + 3^2 + 5^2 + x^2 + y^2 \text{ OR}$ $\sum (x-\bar{x})^2 = (3-6)^2 + (5-6)^2 + (8-6)^2 + (10-6)^2 + (5-6)^2 + (3-6)^2 + (x-6)^2 + (12-x-6)^2$ $\frac{3^2 + 5^2 + 8^2 + 6^2 + 8^2 + 10^2 + 3^2 + 5^2 + x^2 + (12-x)^2}{10} - 6^2 = 6.2 \text{ OR}$ $\frac{(3-6)^2 + (5-6)^2 + (8-6)^2 + (10-6)^2 + (5-6)^2 + (3-6)^2 + (x-6)^2 + (12-x-6)^2}{10} = 6.2$ $(x-9)(x-3) = 0$ $x=9 \quad x=3 \quad \text{or} \quad y=3 \quad y=9$ <p>Saripah is the winner</p>	K1 K1 K1 N1 N1	7
6 (a) (i)	$\frac{13i - 8j + 2i}{\sqrt{15^2 + (-8)^2}}$ 17	K1 K1 N1	
(ii)	$\frac{1}{17} \begin{pmatrix} 15 \\ -8 \end{pmatrix}$	N1	
(b) (i)	$v+u$	P1	
(ii)	$\frac{2}{2.5} = \frac{x}{15}$ $x = 12 \text{ m}$	K1 N1	8

Number	Solution & Marking Scheme	Sub Marks	Full Marks
7	<p>(a) Use $\sin \angle AOB = \frac{3}{5}$ 0.6436 rad</p> <p>(b) $\angle BPC = 2.215 \text{ rad}$ or $AC = 4$ $\cap AB = 8(0.6436)$ or $\cap BC = 3(2.215)$ $8(0.6436) + 3(2.215) + 4$ 15.79 cm</p> <p>(c) $A_{OAB} = \frac{1}{2}(8)^2(0.6436)$ or $A_{PBC} = \frac{1}{2}(3)^2(2.215)$ $A_{OPC} = \frac{1}{2}(4)(3)$ $\frac{1}{2}(8)^2(0.6436) - \frac{1}{2}(3)^2(2.215) - \frac{1}{2}(4)(3)$ 4.63 cm^2</p>	<p>K1 N1 K1 K1 K1 N1 K1 K1 K1 N1</p>	<p>10</p>
8	Refer graph 8		
9	<p>(a) $(x-2)^2 + (y-7)^2 = 1^2$ $x^2 + y^2 - 4x - 14y + 52 = 0$</p> <p>(b) Mid point $AC = \left(\frac{-1}{2}, \frac{9}{2}\right)$ Mid Point $BD: \frac{-2+x}{2} = \frac{-1}{2}$ or $\frac{6+y}{2} = \frac{9}{2}$ $(1, 3)$</p> <p>(c) $\frac{1}{2} (-3)(6) + (-2)(7) + (2)(3) + (1)(2) - (-2)(2) - (2)(6) - (1)(7) - (-3)(3)$ 15</p> <p>(d) $y-7 = \frac{7-2}{2-(-3)}(x-2)$ $y = x+5$ Test point $(4, 8)$ $4+5 = 9 \neq 8$ $(4, 8)$ is not on the straight line AC</p>	<p>K1 N1 P1 K1 N1 K1 N1 K1 N1 N1</p>	<p>10</p>

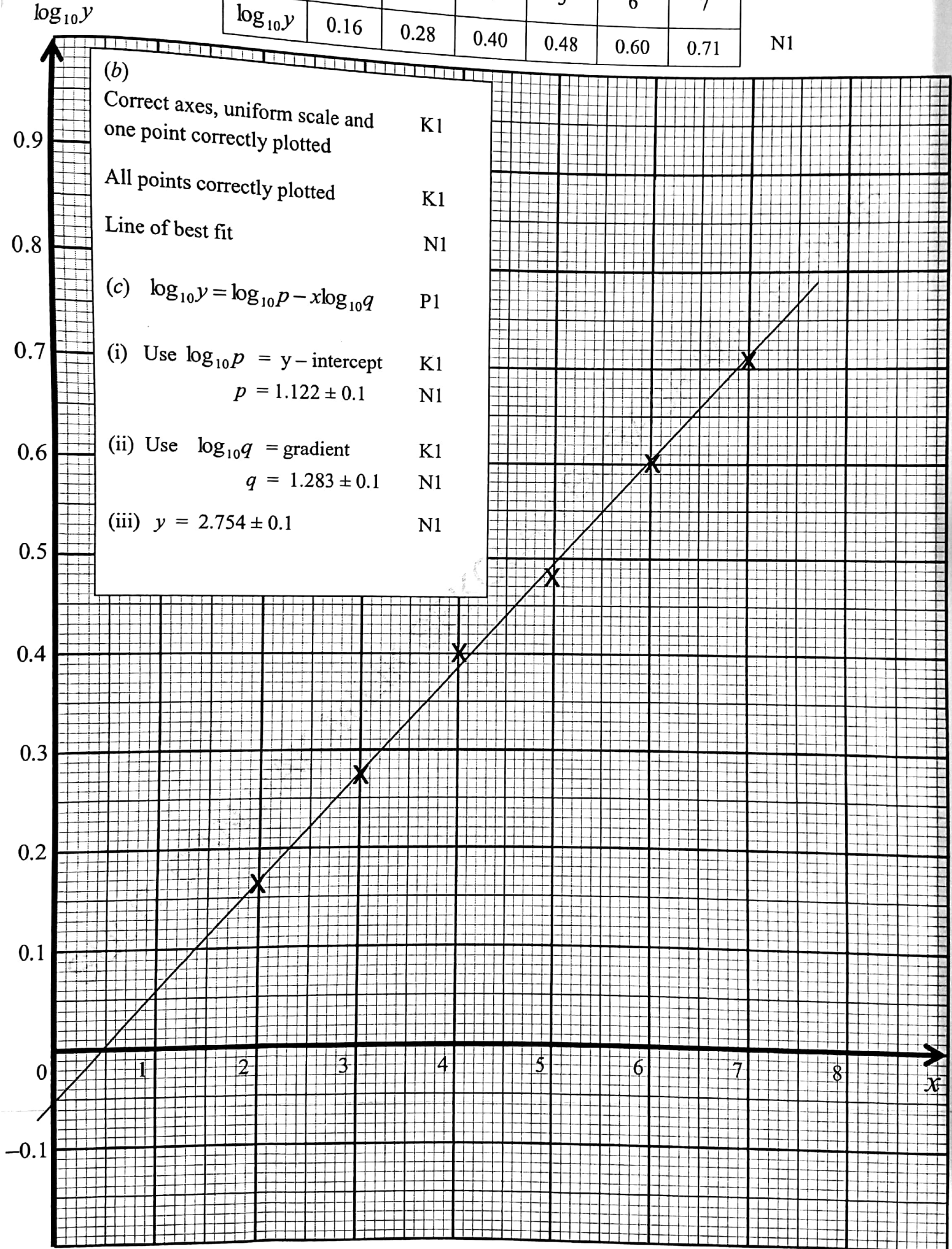
Number	Solution & Marking Scheme		Sub Marks	Full Marks	
10	(a)	$m = 1$	N1		
	(b)	$y = \frac{4x^2}{2} + c$ $y = 2x^2$	K1 N1		
	(c)	$\int_0^1 2x^2 dx = \left[\frac{2x^3}{3} \right]_0^1$ $\frac{2(1)^3}{3} - 0$ $\frac{2}{3}$	K1 K1 N1		
	(d)	$\pi \int_0^1 4x^4 dx = \left[\frac{4x^5}{5} \right]_0^1$ $\frac{1}{3} \pi (2)^2 (1)$ OR $\pi \left[\frac{4(1)^5}{5} - 0 \right]$ $\frac{1}{3} \pi (2)^2 (1) - \pi \left[\frac{4(1)^5}{5} - 0 \right]$ $\frac{8}{15} \pi$	K1 K1 K1 N1		
				10	
11	(a)	(i)	$n(0.2) = 500$ $n = 2500$	K1 N1	
		(ii)	${}^{10}C_4 (0.2)^4 (0.8)^6$ 0.08808	K1 N1	
	(b)	(i)	$P(x > 31) = P(z > 1.375)$ $= 0.0845$	K1 N1	
		(ii)	$P(z > \frac{m-20}{8}) = 0.78$ $z = -0.772$ $-0.772 = \frac{m-20}{8}$ $m = 13.824 \text{ kg}$	K1 P1 K1 N1	
					10

Number	Solution & Marking Scheme		Sub Marks
12	(a)	$a_A = 6t - 15$ $V_A = 3(2.5)^2 - 15(2.5)$ -18.75	K1 K1 N1
	(b)	Use $-2t^2 + 12t < 0$ $t > 6$	K1 N1
	(c)	$a_A = a_B \rightarrow 6t - 15 = -4t + 12$ $t = 2.7$ $S_A = t^3 - \frac{15}{2}t^2$ or $S_B = -\frac{2}{3}t^3 + 6t^2$ $= (2.7)^3 - \frac{15}{2}(2.7)^2 + \left -\frac{2}{3}(2.7)^3 + 6(2.7)^2 \right $ 65.61 m	K1 N1 K1 K1 N1
13	(a)	(i) $\frac{\sin \angle PQR}{15.1} = \frac{\sin 40}{11.7}$ $\angle PQR = 56.06^\circ$	K1 N1
	(ii)	$15.1^2 = 10.3^2 + 8.5^2 - 2(10.3)(8.5)\cos \angle PSR$ $\angle PSR = 106.48^\circ$	K1 N1
	(iii)	$\frac{1}{2}(10.3)(8.5)\sin 106.48^\circ$ $\frac{1}{2}(11.7)(15.1)\sin 83.94^\circ$ $\frac{1}{2}(10.3)(8.5)\sin 106.48^\circ + \frac{1}{2}(11.7)(15.1)\sin 83.94^\circ$ 129.82	K1 K1 K1 N1
	(b)	(i)  $\angle P'Q'R'$ obtuse angle	N1
(ii)	123.94°	N1	

Number	Solution & Marking Scheme	Sub Marks	Full Marks
14	Refer graph 14		
15	(a) Use $I_{15/13} = \frac{P_{15}}{P_{13}} \times 100$ $x=5.48, y=96, z=4.80$ (Correct all N2, 1 mistake N1)	K1 N2	
	(b) $m = 16$ $\frac{137 \times 37 + 115 \times 33 + 96 \times 16 + 150 \times 14}{100}$ 125	P1 K1 N1	
	(c) $\frac{0.50}{P_{13}} \times 100 = 125$ OR $I_{17/15} = \frac{160}{125} \times 100$ $P_{13} = 0.40$ OR $I_{17/15} = 128$ $\frac{P_{17}}{0.40} \times 100 = 160$ OR $\frac{P_{17}}{0.50} \times 100 = 128$ RM 0.64	K1 N1 K1 N1	

x	2	3	4	5	6	7
$\log_{10}y$	0.16	0.28	0.40	0.48	0.60	0.71

N1



- (b) Correct axes, uniform scale and one point correctly plotted K1
- All points correctly plotted K1
- Line of best fit N1
- (c) $\log_{10}y = \log_{10}p - x\log_{10}q$ P1
- (i) Use $\log_{10}p = y - \text{intercept}$ K1
 $p = 1.122 \pm 0.1$ N1
- (ii) Use $\log_{10}q = \text{gradient}$ K1
 $q = 1.283 \pm 0.1$ N1
- (iii) $y = 2.754 \pm 0.1$ N1

QUESTION 14

- Draw one straight line correctly K1
- Draw all straight lines correctly K1
- Shaded region N1

- I $x + y \leq 80$ N1
- II $\frac{x}{y} \geq \frac{1}{3}$ or $y \leq 3x$ N1
- III $100x + 120y \geq 5000$ N1
- c) i) Minimum number male students = 36 N1
- ii) Maximum collection
- (20, 60) N1
- = RM100 (20) + RM120 (60) K1
- = RM9 200
- Maximum profit = $\frac{25}{100} \times \text{RM9 200}$
- = RM2 300 N1

