

**SULIT**  
**1449/2(GMP)**  
**Mathematics**  
**Kertas 2 ( Set 1 )**  
**Peraturan**  
**Pemarkahan**  
**2018**

**1449/2(GMP)**



**SKEMA PRAKTIS BESTARI**

**PROJEK JAWAB UNTUK JAYA (JUJ) 2018**



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**MATHEMATICS**

**Kertas 2**  
**SET 1**

**PERATURAN PEMARKAHAN**

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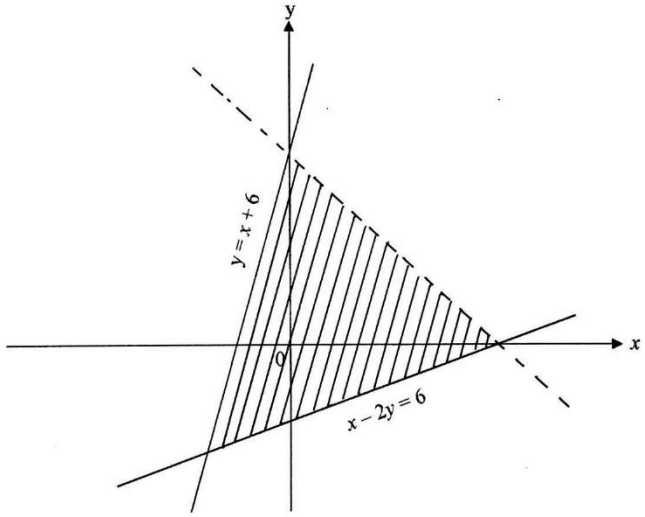
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**UNTUK KEGUNAAN GURU MATA PELAJARAN SAHAJA**

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Peraturan pemarkahan ini mengandungi halaman bercetak

**[Lihat halaman sebelah**  
**SULIT**

Question	Solution and Mark Scheme	Sub Mark	Mark
<p><b>1</b></p>	<div style="text-align: center;">  </div> <p>Straight line <math>x + y = 6</math> correctly drawn with dotted line</p> <p>Correctly shaded the region that satisfies the three inequalities</p>	<p>K1</p> <p>P2</p>	<p><b>3</b></p>
<p><b>2</b></p>	<p><math>\frac{1}{2}(x - 5)(x + 2) = 30</math> <u>or</u> <math>(x - 5)(x + 2) = 60</math> <u>or</u> equivalent</p> <p><math>x^2 - 3x - 70 = 0</math></p> <p><math>(x - 10)(x + 7) = 0</math></p> <p><b>OR</b></p> <p><math>\frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-70)}}{2(1)}</math> <u>or</u> equivalent (K1)</p> <p>13 cm</p> <p>Note:</p> <p>1. Accept without “=0” for K1</p> <p>2. Accept three correct terms on the same side, in any order.</p>	<p>P1</p> <p>K1</p> <p>K1</p> <p>N1</p>	<p><b>4</b></p>
<p><b>3</b></p>	<p><math>\angle XSY</math> or <math>\angle YSX</math></p> <p><math>\tan \angle XSY = \frac{4.5}{6}</math> or <math>\cos \theta = \frac{6}{7.5}</math> or or <math>\sin \theta = \frac{4.5}{7.5}</math></p> <p><math>36.87^\circ</math> or <math>36^\circ 52'</math></p>	<p>P1</p> <p>K1</p> <p>N1</p>	<p><b>3</b></p>

Question	Solution and Mark Scheme	Sub Mark	Mark
4	$2 \times 3 \times 10 \times 6$ $\frac{4}{3} \times \frac{22}{7} \times 0.5^3$ $\frac{360}{550}$ $\frac{21}{21}$ 13	K1 K1 K1 N1	4
5 (a)	$8 = -\frac{4}{3}(-1) + c$ $c = \frac{20}{3}$ $y = -\frac{4}{3}x - \frac{20}{3}$ <u>or</u> equivalent $\sqrt{(8-0)^2 + (-1-5)^2}$ <u>or</u> equivalent 10 cm	P1K1 N1 K1	5
(b)	(5,10)	K2	
6	$x = 3 + y$ <u>or</u> $3x - 3y = 9$ <u>or</u> $2x - 2y = 6$ <u>or</u> equivalent $5x = 60$ <u>or</u> $5y = 45$ <u>or</u> equivalent <b>OR</b> $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{3(-1)-2(1)} \begin{pmatrix} -1 & -2 \\ -1 & 3 \end{pmatrix} \begin{pmatrix} 54 \\ 3 \end{pmatrix}$ (K2) $\frac{1}{3(-1)-2(1)} \begin{pmatrix} -1 & -2 \\ -1 & 3 \end{pmatrix}$ <u>or</u> $\begin{pmatrix} \text{inverse} \\ \text{matrix} \end{pmatrix} \begin{pmatrix} 54 \\ 3 \end{pmatrix}$ (K1) $x = 12$ $y = 9$ NOTE: Accept any variable / symbol	K1 K1 N1 N1	4

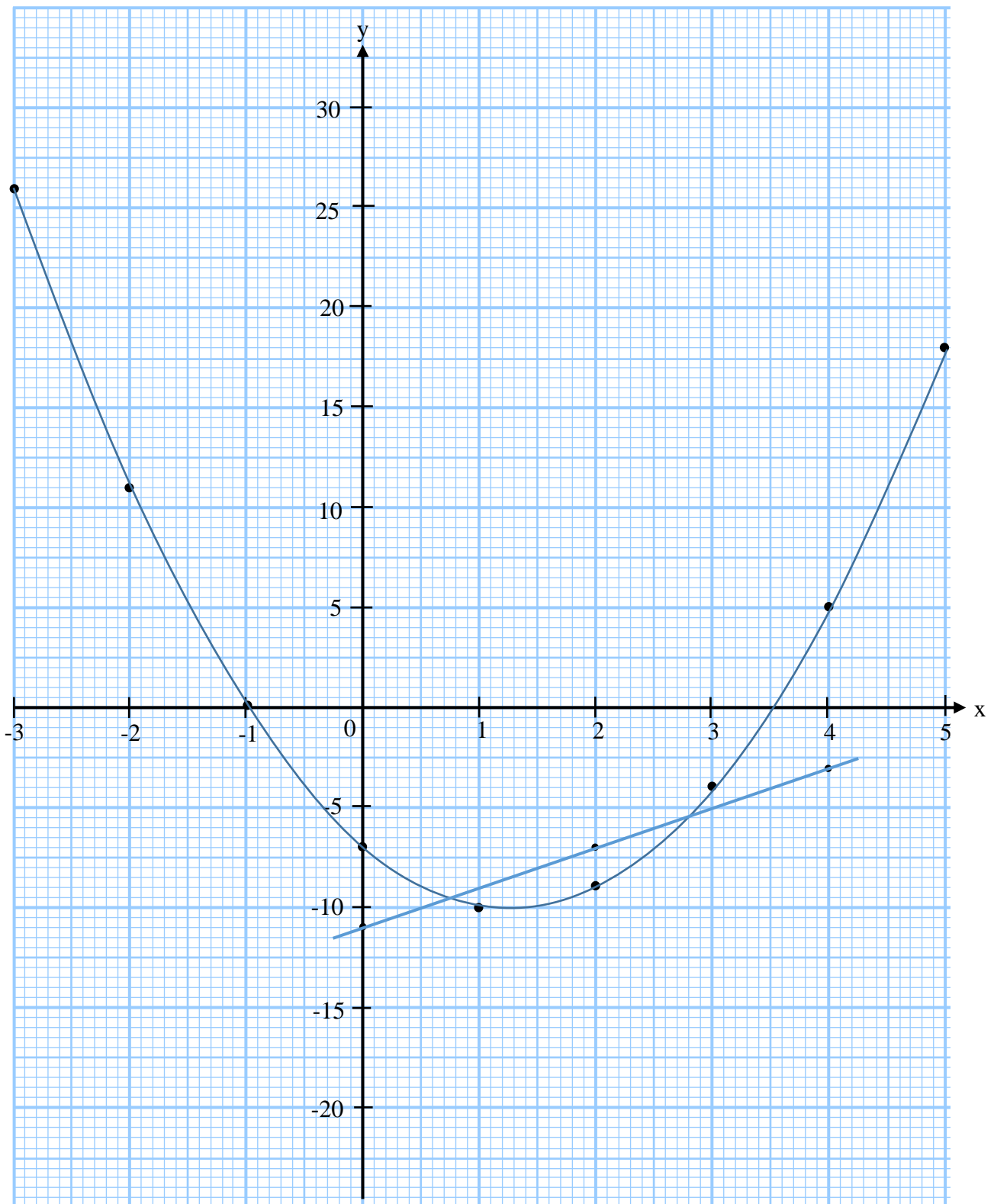
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Question	Solution and Mark Scheme	Sub Mark	Mark
7 (a)	$\frac{270}{360} \times 2 \times \frac{22}{7} \times 28$ <u>or</u> $2 \times \frac{22}{7} \times 14$ <u>or</u> equivalent	K1	
	$\frac{270}{360} \times 2 \times \frac{22}{7} \times 28 + 2 \times \frac{22}{7} \times 14 + 28 + 28$ <u>or</u> equivalent	K1	
(b)	276 cm	N1	
	$\frac{270}{360} \times \frac{22}{7} \times 28^2$ <u>or</u> $\frac{22}{7} \times 14^2$ <u>or</u> equivalent	K1	
	$\frac{270}{360} \times \frac{22}{7} \times 28^2 - \frac{22}{7} \times 14^2$ <u>or</u> equivalent	K1	
	1232 cm <sup>2</sup>	N1	
	NOTE: 1. Accept $\pi$ for K mark 2. Accept correct value for incomplete substitution for K mark. 3. Correct answer from incomplete working award Kk2		6
8	a) All	K1	
	b) If $Q \subset P$ then $P \cap Q = Q$	K1	
	c) If $2y - 1 = 9$ , then $y = 5$	N1	
	d) $3n^2 - 4, n = 0, 1, 2, 3, \dots$	N1	
			4
9(a) (i)	$12\text{ms}^{-1}$	P1	
	(ii) $\frac{16-12}{0-5}$ <u>or</u> equivalent	K1	
	- 0.8 ms <sup>-2</sup>	N1	
	(b) $240 - [\frac{1}{2}(12 + 16)5 + \frac{1}{2}(7 + 19)12]$	K2	
	Note: $\frac{1}{2}(12 + 16)5$ <u>or</u> $+\frac{1}{2}(7 + 19)12]$ seen award K1		
14m	N1		
			6

Question	Solution and Mark Scheme	Sub Mark	Mark
<p><b>10</b></p>	<p><math>2p + q = 120</math> or equivalent</p> <p><math>2p - q = 0</math> or equivalent</p> <p><math>\begin{pmatrix} 2 &amp; 1 \\ 2 &amp; -1 \end{pmatrix} \begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} 120 \\ 0 \end{pmatrix}</math> or equivalent</p> <p><math>\frac{1}{2(-1)-2(1)} \begin{pmatrix} -1 &amp; -1 \\ -2 &amp; 2 \end{pmatrix} \begin{pmatrix} 120 \\ 0 \end{pmatrix}</math> or <math>\begin{matrix} \text{(inverse)} \\ \text{matrix} \end{matrix} \begin{pmatrix} 120 \\ 0 \end{pmatrix}</math> or equivalent</p> <p><math>p = 30</math> <math>q = 60</math></p> <p><u>Note:</u></p> <p>1. Do not accept or <math>\begin{matrix} \text{(inverse)} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 2 &amp; 1 \\ 2 &amp; -1 \end{pmatrix}</math> or <math>\begin{matrix} \text{(inverse)} \\ \text{matrix} \end{matrix} = \begin{pmatrix} 1 &amp; 0 \\ 0 &amp; 1 \end{pmatrix}</math></p> <p>2. <math>\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 30 \\ 60 \end{pmatrix}</math> as final answer, award N1.</p> <p>3. Do not accept any solutions solved not using matrix method.</p>	<p>P1</p> <p>P1</p> <p>P1</p> <p>K1</p> <p>N1</p> <p>N1</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p><b>6</b></p>
<p><b>11</b></p>	<p>(a) { (4,B), (5,B), (3,G), (5,G), (3,P), (7,P), (1,R), (3,R), (6,R) }</p> <p><u>Note</u> : Allow two mistake in listing the sample space for P1</p> <p>(b) (i) { (1,G), (3,G), (4,G), (5,G) }</p> <p><math>\frac{4}{24} = \frac{1}{6}</math></p> <p>(ii) { (3,B), (3,G), (3,P), (3,R), (6,B), (6,G), (6,P), (6,R), (1,R), (4,R), (5, R), (7,R) }</p> <p><math>\frac{12}{24} = \frac{1}{2}</math></p> <p><u>Note:</u> Accept answer without working for K1N1 provided P2 obtained.</p>	<p>P1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p>	<p><b>1</b></p> <p><b>2</b></p> <p><b>2</b></p> <p><b>5</b></p>

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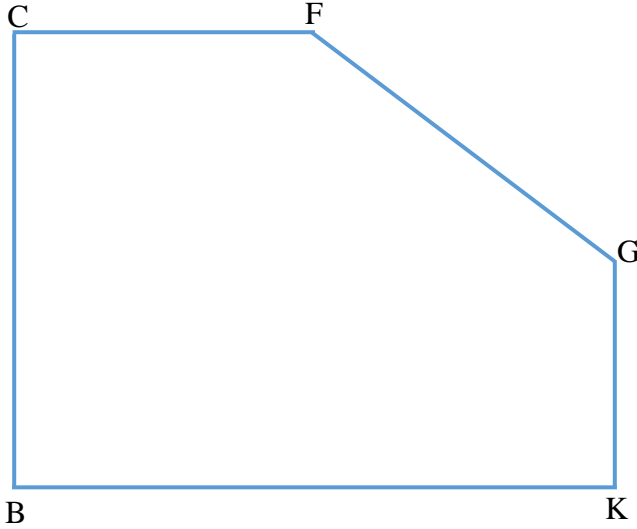
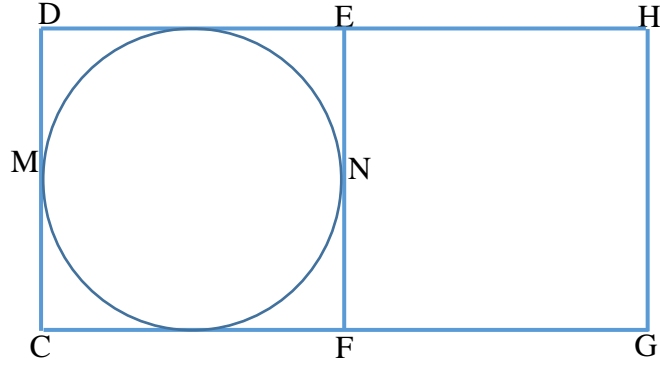


Question	Solution and Mark Scheme	Sub Mark	Mark
13(a)	(i) (5 , -1)  Note: (5,-1) marked on diagram or (3, -3) seen or (3, -3) marked on diagram, award P1  (ii) (7, 1)  Note: (7,1) marked on diagram or (1,5) seen or (1,5) marked on diagram, award P1	P2	4
(b) (i)	(a) <b>U</b> = Reflection at line $y = 1$  <u>Note:</u> 1. Reflection, award P1 .  (b) <b>V</b> = Enlargement, centre F(4,0), scale factor 2  <u>Note:</u> 1. Enlargement, centre F(4,0) or Enlargement, scale factor 2 award P2 2. Enlargement, award P1	P2	5
	(ii) $180 + \text{area of object} = 2^2 \times \text{area of object}$ or equivalent  $3 \text{ area of object} = 180$  $\text{Area of object} = 60$  <u>OR</u>  $\frac{180}{9} \times 3$ (K2)  60	K2	3
		N1	12

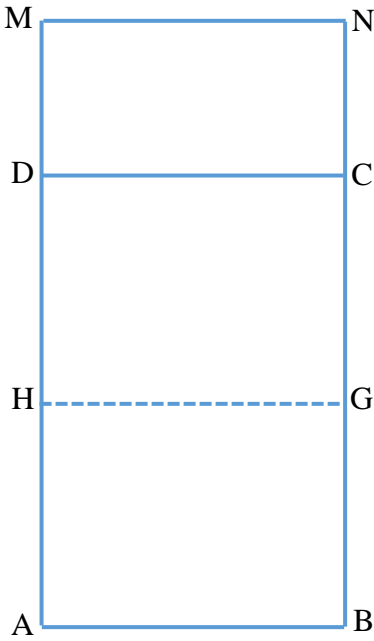


Question	Solution and Mark Scheme	Sub Mark	Mark																											
<p>(a)</p>	<table border="1" data-bbox="448 304 1107 770"> <thead> <tr> <th>Mass (g) <i>Jisim (g)</i></th> <th>Frequency <i>Kekerapan</i></th> <th>Midpoint <i>Titik tengah</i></th> </tr> </thead> <tbody> <tr><td>30 – 34</td><td>0</td><td>32</td></tr> <tr><td>35 – 39</td><td>2</td><td>37</td></tr> <tr><td>40 – 44</td><td>6</td><td>42</td></tr> <tr><td>45 - 49</td><td>7</td><td>47</td></tr> <tr><td>50 - 54</td><td>10</td><td>52</td></tr> <tr><td>55 - 59</td><td>8</td><td>57</td></tr> <tr><td>60 - 64</td><td>4</td><td>62</td></tr> <tr><td>65 - 69</td><td>3</td><td>67</td></tr> </tbody> </table> <p data-bbox="453 822 778 927">           Mass : III to VII            Frequency : I to VII            Midpoint : I to VII         </p>	Mass (g) <i>Jisim (g)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>	30 – 34	0	32	35 – 39	2	37	40 – 44	6	42	45 - 49	7	47	50 - 54	10	52	55 - 59	8	57	60 - 64	4	62	65 - 69	3	67	<p>P1 P2 P1</p>	<p>4</p>
	Mass (g) <i>Jisim (g)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>																											
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55 - 59	8	57																												
60 - 64	4	62																												
65 - 69	3	67																												
<p>(b)</p>	<p>(i) 50 – 54</p> <p>(ii)</p> $\frac{0 \times 32 + 2 \times 37 + 6 \times 42 + 7 \times 47 + 10 \times 52 + 8 \times 57 + 4 \times 62 + 3 \times 67}{40}$ <p>= 52</p>	<p>P1 K2 N1</p>	<p>4</p>																											
<p>(c)</p>	<p><u>Frequency Polygon</u>            Axes drawn in correct directions with uniform scale for <math>32 \leq x \leq 72</math> and <math>0 \leq y \leq 11</math>            *8 points correctly plotted using correct values of midpoint.</p> <p>Note:            *4 or *5 points correctly plotted, award K1.</p> <p>Frequency Polygon correctly drawn</p>	<p>P1 K2 N1</p>	<p>4</p>																											
			<p>2 12</p>																											



Question	Solution and Mark Scheme	Sub Mark	Mark
<p>15(a)</p>	<div style="text-align: center;">  </div> <p>Correct shape with trapezium BCFGK .                      All solid lines.  <math>BK &gt; BC &gt; CF &gt; GK</math>                      Measurements correct to <math>\pm 0.2</math> cm (one way) and                      all angles at vertices = <math>90^\circ \pm 1^\circ</math></p>	<p>K1</p> <p>K1</p> <p>N1</p>	<p>3</p>
<p>(b)</p> <p>(i)</p>	<div style="text-align: center;">  </div> <p>Correct shape with rectangles CDHG, CDEF, EFGH and circle MN                      All solid lines.  <math>CG &gt; GH = EH = ED = DC = CF</math></p> <p>Measurements correct to <math>\pm 0.2</math> cm (one way) and all angles at vertices                      of rectangles = <math>90^\circ \pm 1^\circ</math></p>	<p>K1</p> <p>K1</p> <p>N2</p>	<p>4</p>

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Question	Solution and Mark Scheme	Sub Mark	Mark
(ii)	<div style="text-align: center;">  </div> <p>Correct shape with rectangles ABMN, ABCD and CDMN All solid lines.</p> <p><u>Note:</u> Ignore dashed line</p> <p>H – G joined by a dashed line to form a rectangle ABGH and CDHG</p> <p><math>MA &gt; AB &gt; BG = GC &gt; CN</math></p> <p>Measurements correct to <math>\pm 0.2</math> cm (one way) and All angles at vertices of rectangles = <math>90^\circ \pm 1^\circ</math></p>	<p>K1</p> <p>K1</p> <p>K1</p> <p>N2</p>	<p>5</p> <p style="text-align: center;"><b>12</b></p>

Question	Solution and Mark Scheme	Sub Mark	Mark	
16(a)	(55°N/U, 35°E/T)	P2	4	
(b)	(70 + 35) x 60 x cos 55° <u>Note:</u> (105° X 60°) or cos 55° correctly used, award K1  3613.53 n.m	K2		
(c)	(35 + 35) x 60 4200 n.m	K1 N1		2
(d)(i)	750 x 2.5  1875 n.m	K1 N1		3
(ii)	$55 \sim \frac{1875}{60}$  23.75°N/U	K1K1  N1	12	
<b>PERATURAN PEMARKAHAN TAMAT</b>				