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Mark schemes must be read in conjunction with the question papers and the report on the examination.

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Cambridge is publishing the mark schemes for the May/June 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
Abbreviations
cao  correct answer only
cso  correct solution only
dep  dependent
ft   follow through after error
isw  ignore subsequent working
oe   or equivalent
SC   Special Case
www  without wrong working

SECTION A

<table>
<thead>
<tr>
<th>Qu</th>
<th>Answers</th>
<th>Mark</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1(a)</td>
<td>37.35 and A</td>
<td>2</td>
<td>M1 for $315 \times 0.05 + 720 \times 0.03$</td>
</tr>
<tr>
<td>(b) (i)</td>
<td>$0.05$</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(ii)</td>
<td>Large and $0.0485$ seen oe</td>
<td>1</td>
<td></td>
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</tbody>
</table>
| (c) | 890 | 3 | M1 for $\frac{1134.75}{0.85}$  
M1 for their $1335 - (375 + 70)$ |
| 2(a) | $(7, 9)$ | 1 | |
| (b) (i) | $y = 2x - 5$ | 2 | M1 for gradient $\frac{15 + 21}{10 + 8}$ ($= 2$) |
| (ii) | Yes and $-9 = 2 \times -2 - 5$ | 1 | ft correct conclusion from their equation with the working shown |
| (c) (i) | $(-5, 0)$ | 1 | |
| (b) | $\left(\frac{4p - 15}{3}, p\right)$ | 2 | M1 for line through $(4, 9)$ and $(6, 6)$ |
| (ii) | $(5, 7 \frac{1}{2})$ | 2 | B1 for either $x$ or $y$ coordinate |
| 3(a) | $10.6 - 10.62$ | 2 | M1 for $\tan 37 = \frac{8}{QR}$ |
| (ii) | 192 | 2 | M1 for $4\times$ seen |
| (b) | 6.40 | 2 | M1 for $\frac{46.62}{0.45}$ |
| (c) | 18 | 2 | M1 for $(k =) 90$ oe or $\frac{3}{5} \times 30$ |
4. (a) $4x + 5y + 4x + 5y = 1020$ leading to $4x + 5y = 510$
   
   $6x + 3y + 6x + 3y + 4x + y + 4x + y = 1360$
   leading to $5x + 2y = 340$
   
   (b) $x = 40, \ y = 70$
   
   (c) $0.56$

5. (a) (i) $\begin{pmatrix} -10 & -4 \\ 15 & 7 \end{pmatrix}$
   
   (ii) $\begin{pmatrix} -0.5 & -1 \\ 1.5 & 2 \end{pmatrix}$
   
   (b) (i) $13$
   
   (ii) $\begin{pmatrix} 8 \\ 6 \end{pmatrix}$
   
   (c) (i) $\begin{pmatrix} -5 \\ 2 \end{pmatrix}$
   
   (ii) $(18, 9)$
   
   (iii) $22$

6. (a) (i) Translation cao $\begin{pmatrix} 1 \\ -5 \end{pmatrix}$
   
   (b) Enlargement cao Scale factor 3, Centre $(6, 4)$
   
   (ii) (a) $(-1, -2)$
   
   (b) $(-1, 0)$
   
   (b) (i) Kite
   
   (ii) $(1, 3)$ $(4, 2)$

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### SECTION B

#### 7 (a) 30.4 to 30.45

- 4 M1 for $16^2 + 20^2 \pm (2) \times 16 \times 20 \cos 115^\circ$
- M1 for $\sqrt{656 - 640 \cos 115}$
- A1 for 926.47(…)

(b) $16 \cos 25^\circ$ oe

- 2 M1 for $\cos 25 = \frac{x}{16}$

(c) (i) 28 www

- 2 M1 for $\frac{1}{2} (20 + AD) \times 14.5 = 348$

(ii) $\frac{1}{2} \times 28 \times 14.5 (= 203)$

- 1 $\frac{1}{2} \times 30.4 \times 28 \sin 28.5$

(iii) 28.4 to 28.5

- 3 ft M1 for $\frac{1}{2} \times 30.4 \times 28 \times \sin CAD = 203$
- M1 for $\sin CAD = \frac{203}{\sqrt{28} \times 30.4 \times 28}$

ft their AC and their AD

#### 8 (a) (i) $y^2 + 18y + 81 = y^2 + y^2 + 10y + 25$

- 2 M1 for $(y + 9)^2 = y^2 + (y + 5)^2$ oe

$y^2 - 8y - 56 = 0$

(ii) 12.5, −4.5

- 3 M1 for $y = \frac{8 \pm \sqrt{8^2 + 4 \times 56}}{2}$ soi

A1 for one solution or 12.48(5)… and −4.48(5)…

(iii) 21.5

- 1 ft 9 + their positive y

(b) (i) (a) $\hat{O}QS = 90 - x$

- 1 and conclusion

(b) $\frac{1}{2} (90 + x)$ oe cao

- 2 M1 for $\frac{1}{2} (180 - (90 - x))$

(ii) (a) $3 \times \frac{1}{2} (90 - x)$

- 2 M1 for $3 \times \frac{1}{2} (90 - x) = 2 \times$ their $OQS$

$= 2 \times \frac{1}{2} (90 + x)$

leading to $180 + 2x$

$= 270 - 3x$

(b) 18

- 1

#### 9 (a) (i) Histogram with

- 3 B2 for 4 correct columns or
- B1 for at least 1 correct column

heights 0.14, 0.56 ,0.74, 0.42 and 0.2

widths 100, 50, 50, 50, 100

(ii) 14 − 16

- 1

(iii) 200 $m < 250$

- 1

(iv) $\frac{7}{20}$ cao

- 1
<p>| | | | |</p>
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</table>
| (b) \((p =) 35\) | 3 | M1 for \(\frac{125 \times 14 + 175p + 225 \times 26}{40 + p} = 183\)  
M1 \(183p - 175p = 1750 + 5850 - 7320\)
| (c) (i) 1 | 1 |   |
| (ii) \(\frac{49k}{750k}\) | 2 ft | M1 for \(\frac{7}{20} \times \frac{14}{75}\)  
ft their \(\frac{7}{20}\) and their 75 |

<table>
<thead>
<tr>
<th>10</th>
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</thead>
<tbody>
<tr>
<td>(a) 32</td>
<td>2</td>
<td>M1 for (\frac{200}{6.2})</td>
<td></td>
</tr>
</tbody>
</table>
| (b) (i) 1.13 | 3 | B2 for figs 1128…….(or 113) or  
M1 for \(0.2 = \pi r^2\) fig 5 |
| (ii) (a) 56.5 to 56.51 | 3 | M1 for \(\pi \times 1.97 \times 5\)  
M1 for their volume – 0.2 |
| (b) 53 | 2 ft | M1 for \(\frac{3000}{56.5}\)  
ft their 56.5 with rounding down to an integer |
| (c) 12.9 | 2 | M1 for \(2 \times \pi \times 1.9 (= 11.9)\) |

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<thead>
<tr>
<th>11</th>
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</thead>
<tbody>
<tr>
<td>(a) (i) 35</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>(ii) 360</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>(iii) 7</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) (i) 10</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| (ii) (8.00, 0) to (8.15, 10) \(8.15, 10\) to (8.23, 22) \(8.23, 22\) to (8.47, 30) | 2 ft | B1 for 2 correct lines  
ft their 10 and their 10 + 12 |
| (iii) 20 | 2 ft | M1 for \(\frac{8}{24}(\times 60)\)  
ft \(18 - \text{their 10}\) \(24/(60)\) |
| (c) (i) 12.29 cao | 2 | M1 for \(\sin 55 = \frac{MK}{15}\) oe |
| (ii) 247° | 1 |   |
| (iii) 10.2 to 10.7 | 1 |   |