

Mark Scheme (Results)

January 2014

Pearson Edexcel International
Advanced Level

Decision Mathematics 1 (WDM01/01)

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

EDEXCEL GCE MATHEMATICS

General Instructions for Marking

1. The total number of marks for the paper is 75.
2. The Edexcel Mathematics mark schemes use the following types of marks:
 - **M** marks: method marks are awarded for 'knowing a method and attempting to apply it', unless otherwise indicated.
 - **A** marks: Accuracy marks can only be awarded if the relevant method (M) marks have been earned.
 - **B** marks are unconditional accuracy marks (independent of M marks)
 - Marks should not be subdivided.
3. Abbreviations

These are some of the traditional marking abbreviations that will appear in the mark schemes.

- bod – benefit of doubt
 - ft – follow through
 - the symbol \surd will be used for correct ft
 - cao – correct answer only
 - cso - correct solution only. There must be no errors in this part of the question to obtain this mark
 - isw – ignore subsequent working
 - awrt – answers which round to
 - SC: special case
 - oe – or equivalent (and appropriate)
 - dep – dependent
 - indep – independent
 - dp decimal places
 - sf significant figures
 - * The answer is printed on the paper
 - \square The second mark is dependent on gaining the first mark
4. All A marks are 'correct answer only' (cao.), unless shown, for example, as A1 ft to indicate that previous wrong working is to be followed through. After a misread however, the subsequent A marks affected are treated as A ft, but manifestly absurd answers should never be awarded A marks.
 5. For misreading which does not alter the character of a question or materially simplify it, deduct two from any A or B marks gained, in that part of the question affected.
 6. If a candidate makes more than one attempt at any question:
 - If all but one attempt is crossed out, mark the attempt which is NOT crossed out.
 - If either all attempts are crossed out or none are crossed out, mark all the attempts and score the highest single attempt.
 7. Ignore wrong working or incorrect statements following a correct answer.

Question Number	Scheme	Marks
1. (a)	Either 11 10 14 8 13 6 4 15 7 17 Or 4 11 17 10 14 8 13 6 7 15	M1 A1 (2)
(b)	e.g. using middle right 11 17 10 14 8 13 6 4 15 7 pivot 13 17 14 15 13 11 10 8 6 4 7 pivots 14, 6 17 15 14 13 11 10 8 7 6 4 pivots 15, 8 (4) 17 15 14 13 11 10 8 7 6 4 pivots (17), 10, (7) 17 15 14 13 11 10 8 7 6 4 (sort complete)	M1 1A1 2A1ft 3A1 (4)
(c)	$\frac{105}{26} \approx 4.0385$ so 5 bins needed	M1 A1 (2)
8 marks		

Notes

a1M1: Bubble sort, end number in place correctly.

a1A1: CAO – isw after one complete pass

SC for (a): If list sorted into ascending order – must be fully correct so either

17 11 14 10 13 8 6 15 7 4 or 17 11 15 10 14 8 13 6 4 7 scores M1A0

b1M1: Quick sort – pivots, p, selected and first pass gives $\langle p, p, \rangle p$. **If only choosing 1 pivot per iteration M1 only. Using bubble sort in this part is M0.**

b1A1: First pass correct, pivots chosen consistently for second pass.

b2A1ft: Second and third passes correct (ft from their first pass and choice of pivots) – need not be choosing the pivot for the fourth pass for this mark.

b3A1: CSO all correct including choice of pivots for the fourth pass and then **either** a ‘stop’ statement **or** final re-listing **or** using each item as a pivot.

Note: In part (b) if **either** ascending quick sort (which is not reversed at the end of the sort) **or** using the list after part (a) then mark as a misread (so remove the final two A marks earned in this part – so max of 2/4 in (b)). If list is reversed in part (b) after ascending quick sort then full marks can be awarded. If attempting quick sort on ordered list then M0.

c1M1: Attempt to find lower bound $(105 \pm 17) / 26$, **or** answer correct to 3 significant figures (either truncated or rounded) so accept 4.03 or 4.04). Must be a numerical argument.

c1A1: CSO including 5 (5 with no working scores M0).

Notes for Question 1 continued

Alternatives to 1(b)

Middle left ascending

11	17	10	14	<u>8</u>	13	6	3	15	7	pivot 8	M1
11	17	<u>10</u>	14	13	15	<u>8</u>	6	<u>4</u>	7	pivots 10, 4	1A1
11	17	<u>14</u>	13	15	<u>10</u>	<u>8</u>	<u>6</u>	7	<u>4</u>	pivots 14, 6	
<u>17</u>	15	<u>14</u>	<u>11</u>	13	<u>10</u>	<u>8</u>	7	<u>6</u>	<u>4</u>	pivots 17, 11, (7)	2A1ft
<u>17</u>	15	<u>14</u>	13	<u>11</u>	<u>10</u>	<u>8</u>	7	<u>6</u>	<u>4</u>	sort complete	3A1

Misreads for 1(b)

Middle right

Middle left

11	17	10	14	8	<u>13</u>	6	4	15	7	pivot 13	11	17	10	14	<u>8</u>	13	6	4	15	7	pivot 8
11	10	8	<u>6</u>	4	7	<u>13</u>	17	<u>14</u>	15	pivots 6, 14	6	<u>4</u>	7	<u>8</u>	11	17	<u>10</u>	14	13	15	pivots 4, 10
4	<u>6</u>	11	10	<u>8</u>	7	<u>13</u>	<u>14</u>	17	<u>15</u>	pivots 8, 15	4	<u>6</u>	7	<u>8</u>	<u>10</u>	11	17	<u>14</u>	13	15	pivots 6, 14
4	<u>6</u>	7	<u>8</u>	11	<u>10</u>	<u>13</u>	<u>14</u>	<u>15</u>	17	pivot 10	4	<u>6</u>	7	<u>8</u>	<u>10</u>	<u>11</u>	13	<u>14</u>	<u>17</u>	15	pivots 11, 17
4	<u>6</u>	7	<u>8</u>	<u>10</u>	11	<u>13</u>	<u>14</u>	<u>15</u>	17	sort complete	4	<u>6</u>	7	<u>8</u>	<u>10</u>	<u>11</u>	13	<u>14</u>	15	<u>17</u>	sort complete

:

Question Number	Scheme	Marks
2. (a)	AB, BC, CF, CE; FG, AD; EH, HI	M1; 1A1; 2A1 (3)
(b)	£191	B1 (1)
(c)(i)	CF, reject CE, AB, FG; {AD, reject AC}, reject DG, {reject BE, reject DF}, EH, reject FH, HI (Note BC and EF are already in the tree)	M1; 1A1 2A1
(ii)	e.g. Prim cannot be used since with Prim the tree 'grows' in a connected fashion e.g. Kruskal can build its tree from disconnected fragments	B2,1,0 (5)
(d)	£147	B1 (1)
		10 marks

Notes

a1M1: First four arcs (AB, BC, CF, CE) correctly chosen, or first five nodes (ABC FE) correctly chosen in order. **If any rejections seen at any point then M1 (max) only.**

a1A1: First six arcs correctly chosen (AB, BC, CF, CE, FG, AD), or all nodes in order (ABC FE GDHI).

a2A1: CSO (must be arcs).

b1B1: CAO

ci1M1: Kruskal's - first three arcs (CF, AB, FG) correctly chosen and **at least one rejection seen at some point.**

ci1A1: All arcs in tree selected correctly at correct time (CF, AB, FG, AD, EH, HI). Ignore any reference to BC and EF.

ci2A1: CSO including all rejections correct and at the correct time. Ignore any reference to BC and EF.

cii1B1: Partially correct answer – e.g. an indication that the arcs (BC and EF) are not connected **or** any mention of the tree being (initially) disconnected - so in both of these examples a pertinent correct statement is made but no explicit mention is made to either of the two minimum connector algorithms (i.e. no mention is made of Prim requiring arcs to be connected or that Kruksal can grow in a disconnected fashion). Give bod but for this mark there must be some mention of the 'unconnected' nature of the two initial arcs or problem. Note: describing how Kruskal can be adapted to find the MST scores no marks.

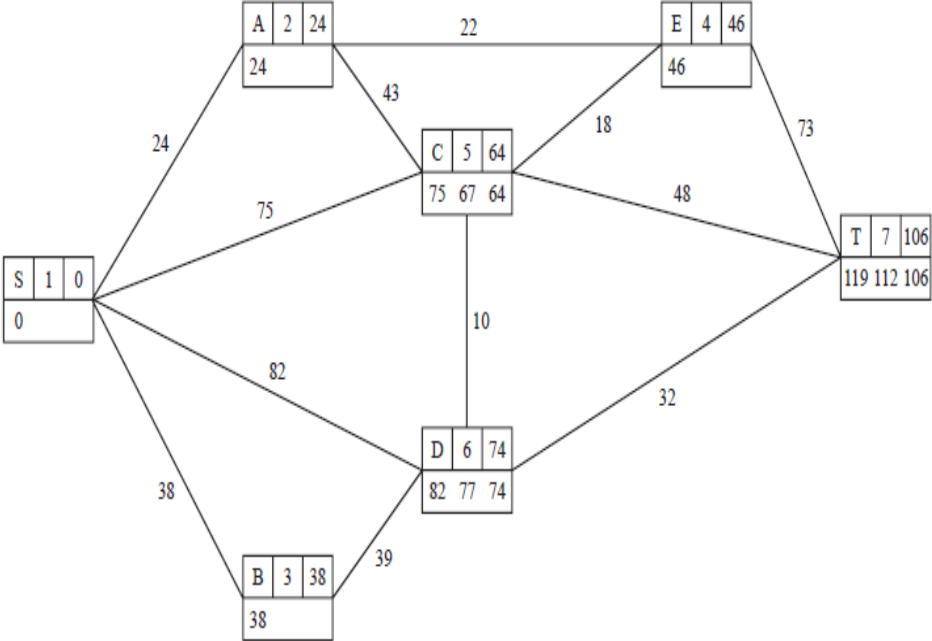
cii2B1: Fully correct answer (so either Kruskal allows a tree to be formed from initially unconnected arcs or Prim requires the arcs/tree to be connected at all times - so linking the correct algorithm with the issues of this particular problem) – do not condone incorrect technical language for this mark (e.g. vertex for arc, point for vertex etc.)

d1B1: CAO

Question Number	Scheme	Marks																														
Notes for Question 2 continued																																
<p>Misread: Starting at a node other than A scores M1 only – must have the first four arcs (or five nodes) correct.</p>																																
<table border="1"> <thead> <tr> <th data-bbox="528 349 679 421">Starting at</th> <th data-bbox="679 349 1023 421">Minimum arcs required for M1 only</th> <th data-bbox="1023 349 1174 421">Nodes</th> </tr> </thead> <tbody> <tr> <td data-bbox="528 421 679 461">A</td> <td data-bbox="679 421 1023 461">AB, BC, CF, CE</td> <td data-bbox="1023 421 1174 461">ABCFE</td> </tr> <tr> <td data-bbox="528 461 679 501">B</td> <td data-bbox="679 461 1023 501">AB, BC, CF, CE</td> <td data-bbox="1023 461 1174 501">BACFE</td> </tr> <tr> <td data-bbox="528 501 679 542">C</td> <td data-bbox="679 501 1023 542">CF, CE, FG, BC</td> <td data-bbox="1023 501 1174 542">CFEGB</td> </tr> <tr> <td data-bbox="528 542 679 582">D</td> <td data-bbox="679 542 1023 582">AD, AB, BC, CE</td> <td data-bbox="1023 542 1174 582">DABCE</td> </tr> <tr> <td data-bbox="528 582 679 622">E</td> <td data-bbox="679 582 1023 622">CE, CF, FG, BC</td> <td data-bbox="1023 582 1174 622">ECFGB</td> </tr> <tr> <td data-bbox="528 622 679 663">F</td> <td data-bbox="679 622 1023 663">CF, CE, FG, BC</td> <td data-bbox="1023 622 1174 663">FCEGB</td> </tr> <tr> <td data-bbox="528 663 679 703">G</td> <td data-bbox="679 663 1023 703">FG, CF, CE, BC</td> <td data-bbox="1023 663 1174 703">GFCEB</td> </tr> <tr> <td data-bbox="528 703 679 743">H</td> <td data-bbox="679 703 1023 743">EH, CE, CF, FG</td> <td data-bbox="1023 703 1174 743">HECFG</td> </tr> <tr> <td data-bbox="528 743 679 784">I</td> <td data-bbox="679 743 1023 784">HI, EH, CE, CF</td> <td data-bbox="1023 743 1174 784">IHECF</td> </tr> </tbody> </table>			Starting at	Minimum arcs required for M1 only	Nodes	A	AB, BC, CF, CE	ABCFE	B	AB, BC, CF, CE	BACFE	C	CF, CE, FG, BC	CFEGB	D	AD, AB, BC, CE	DABCE	E	CE, CF, FG, BC	ECFGB	F	CF, CE, FG, BC	FCEGB	G	FG, CF, CE, BC	GFCEB	H	EH, CE, CF, FG	HECFG	I	HI, EH, CE, CF	IHECF
Starting at	Minimum arcs required for M1 only	Nodes																														
A	AB, BC, CF, CE	ABCFE																														
B	AB, BC, CF, CE	BACFE																														
C	CF, CE, FG, BC	CFEGB																														
D	AD, AB, BC, CE	DABCE																														
E	CE, CF, FG, BC	ECFGB																														
F	CF, CE, FG, BC	FCEGB																														
G	FG, CF, CE, BC	GFCEB																														
H	EH, CE, CF, FG	HECFG																														
I	HI, EH, CE, CF	IHECF																														

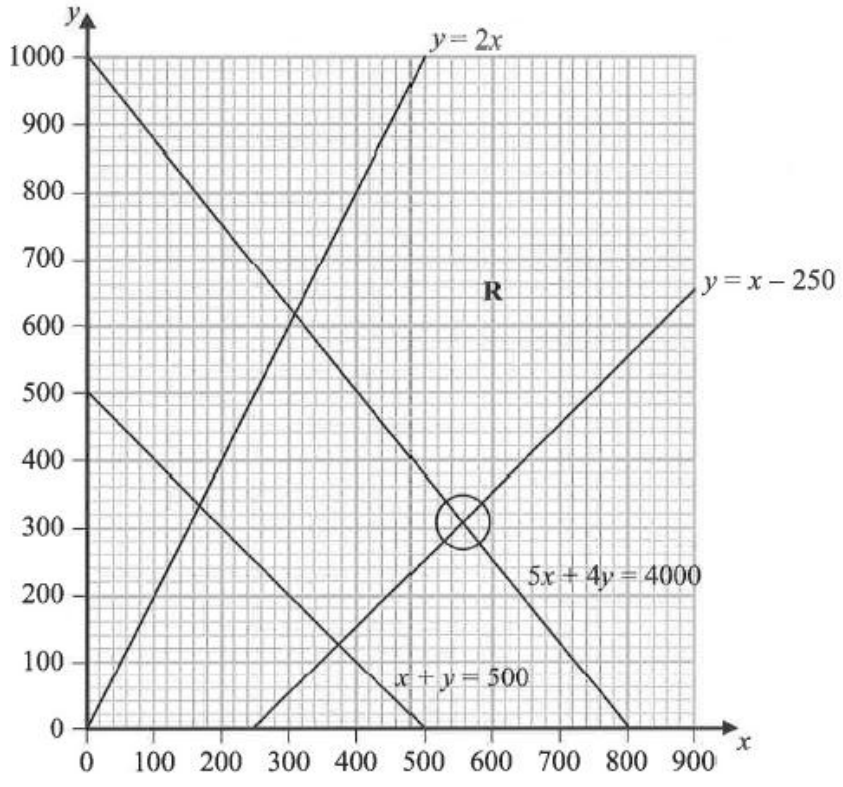
Question Number	Scheme	Marks
<p>3. (a)</p> <p>(b)</p> <p>(c)</p>	<p>A matching is a pairing of some or all of the elements of one set X, with elements of another set Y</p> <p>$B - 5 = S - 4 = T - 6$ Change status to give $B = 5 - S = 4 - T = 6$ Improved matching: $B = 5, C = 1, (H \text{ unmatched}), K = 2, S = 4, T = 6$</p> <p>Either $H - 6 = T - 4 = S - 2 = K - 1 = C - 3$ Changing status to give: $H = 6 - T = 4 - S = 2 - K = 1 - C = 3$ Complete matching: $B = 5, C = 3, H = 6, K = 1, S = 2, T = 4$</p> <p>Alternative $H - 6 = T - 4 = S - 5 = B - 2 = K - 1 = C - 3$ Changing status to give: $H = 6 - T = 4 - S = 5 - B = 2 - K = 1 - C = 3$ Complete matching: $B = 2, C = 3, H = 6, K = 1, S = 5, T = 4$</p>	<p>1B1 2B1 (2)</p> <p>M1 1A1 2A1 (3)</p> <p>M1 1A1 2A1 (3)</p> <p>8 marks</p>
Notes		
<p>a1B1: pairing or one to one a2B1: element(s) from one set with element(s) of the other. b1M1: Alternating path from B to 6 - or vice versa b1A1: CAO including change status (stated or shown), chosen path clear. b2A1: CAO. Must follow from correct stated path, diagram okay (must be a clear diagram with only five arcs) c1M1: Alternating path from H to 3 (or vice versa) c1A1: CAO including change status (stated or shown), chosen path clear. c2A1: CAO. Must follow from two correct stated paths, diagram okay (must be a clear diagram with only six arcs). Must have scored both M marks in part (b) and (c).</p>		

Question Number	Scheme	Marks
<p>4. (a)</p> <p>(b)</p> <p>(c)</p>	<p>AE + IJ = 56 + 38 = 94 AI + EJ = 54 + 39 = 93* AJ + EI = 47 + 48 = 95 Repeat arcs AB, BD, DH, HI, EG and GJ.</p> <p>Length: 367 + 93 = 460 metres</p> <p>Only AE needs to be repeated so new length is 367 + 35 + 56 = 458 metres So the distance travelled by the robot is decreased</p>	<p>M1 1A1 2A1 3A1 4A1 (5)</p> <p>B1ft (1)</p> <p>M1 A1ft (2)</p> <p style="text-align: right;">8 marks</p>
Notes		
<p>a1M1: Three distinct pairings of their four odd nodes a1A1: One row correct including pairing and total a2A1: Two rows correct including pairing and total a3A1: Three rows correct including pairing and total a4A1: CAO correct arcs identified AB, BD, DH, HI, EG, GJ (accept ABDHI and EGJ). b1B1ft: Must have a choice of at least two pairs seen in part (a). 379 + their least from (a). c1M1: Aim to include their AE (56) [ft from (a)] and add IJ (35) or 35 + '56' or 367 + 35 + '56'. Must see a numerical argument. Or if AE + IJ was the smallest pairing from (a) then comparing/mention of 35 with 38. c1A1ft: Correct calculation and conclusion from their working.</p>		

Question Number	Scheme	Marks
<p>5. (a)</p>	 <p>Shortest path S to T: SAECDT Length of shortest path S to T: 106 km</p>	<p>M1 1A1 (SABE) 2A1 (CD) 3A1ft (T)</p> <p>4A1 5A1ft (6)</p> <p>DM1 1A1 2A1 (3)</p> <p>9 marks</p>
	<p>(b)</p> <p>Shortest paths S to T excluding CE: SACDT and SBDT Length is 109 km</p>	

Notes

- a1M1: Big replaced by smaller at least once in the working values at either C or D or T.
- a1A1: S, A, B and E boxes all correct, including order of labelling.
- a2A1: C and D boxes all correct (including working values in the correct order). Penalise order of labelling only once per question (so C and D labelled in that order with C labelled after S, A, B and E).
- a3A1ft: T correct ft (including working values in the correct order). Penalise order of labelling only once per question (so T labelled after all other nodes).
- a4A1: Route (SAECDT) CAO
- a5A1ft: ft on their final value (if their answer is not 106 ft their final value at T) – ignore incorrect/lack of units.
- b1DM1: Must have scored the M mark in (a). Finding at least one correct path from S to T excluding arc CE.
- b1A1: Both paths correct (SACDT and SBDT)
- b2A1: Length (109) CAO (ignore incorrect/lack of units)

Question Number	Scheme	Marks
<p>6. (a)</p>		<p>B3, 2, 1, 0</p> <p>4B1 R labelled (4)</p>
<p>(b)</p>	<p>Use SE to find exact intersection of $5x + 4y = 4000$ with $y = x - 250$ Use SE to find exact intersection of $5x + 4y = 4000$ with $y = 2x$</p> $P\left(555\frac{5}{9}, 305\frac{5}{9}\right), \text{ and } \left(307\frac{9}{13}, 615\frac{5}{13}\right)$ <p>Attempting to evaluate C at both points and selecting optimal point</p> $C_p = 2 \times 555\frac{5}{9} + 5 \times 305\frac{5}{9} = 2638\frac{8}{9} \quad \left[\text{other is } 3692\frac{4}{13} \right]$	<p>1M1 2M1</p> <p>1A1, 2A1</p> <p>3M1 3A1</p> <p>(6)</p>
<p>(c)</p>	<p>Maximum value of $k = 861\frac{1}{9}$</p>	<p>M1 A1 (2)</p> <p>12 marks</p>

Notes

(a) Lines must pass through one small square of points stated.

- a1B1: for two lines drawn correctly
- a2B1: for three lines drawn correctly
- a3B1: for all four lines drawn correctly

Question Number	Scheme	Marks
Notes for Question 6 continued		
<p style="text-align: center;"> $x + y = 500$ passes through (0, 500), (250,250), (500, 0) $5x + 4y = 4000$ passes through (0, 1000), (400,500), (800, 0) $y = 2x$ passes through (0, 0), (200,400), (400, 800) $y = x - 250$ passes through (250, 0), (500,250), (700, 450) </p> <p>a4B1: Region, R, labelled correctly - not just implied by shading - must have scored all three previous marks in this part.</p> <p>b1M1: Must see simultaneous equations ($y = x - 250$ and $5x + 4y = 4000$) being used to find ‘exact’ point (or correct to 2 dp) – must get to $x = \dots$ or $y = \dots$.</p> <p>b2M1: Must see simultaneous equations ($y = 2x$ and $5x + 4y = 4000$) being used to find ‘exact’ point (or correct to 2 dp) – must get to $x = \dots$ or $y = \dots$.</p> <p>b1A1: accept awrt (555.56, 305.56) exact answers are $\left(\frac{5000}{9}, \frac{2750}{9}\right)$ or $\left(555\frac{5}{9}, 305\frac{5}{9}\right)$</p> <p>b2A1: accept awrt (307.69, 615.38) exact answers are $\left(\frac{4000}{13}, \frac{8000}{13}\right)$ or $\left(307\frac{9}{13}, 615\frac{5}{13}\right)$</p> <p>SC: If no working shown and coordinates are given exactly or correct to 2dp then award M0M0A1A1 (if one coordinate correct then M0M0A1A0 or M0M0A0A1 – award in order as given in b1A1 and b2A1)</p> <p>b3M1: Evaluating C at both of their points and clearly selecting their optimal point</p> <p>b3A1: CAO, accept answer correct to 4 s.f. (either truncated or rounded) – so accept either the correct exact answer or an awrt to either 2638 or 2639 - must be clearly selected as optimal value (exact values are $\frac{23750}{9}$ or $2638\frac{8}{9}$ the other value is $\frac{48000}{13}$ or $3692\frac{4}{13}$)</p> <p>c1M1: Seeking to find $x + y$ at their optimal point.</p> <p style="text-align: right;">c1A1: CAO, accept awrt 861.11 (exact value is $\frac{7750}{9}$ or $861\frac{1}{9}$)</p>		

Question Number	Scheme	Marks
7. (a)		<p>1M1 1A1</p> <p>2M1 2A1 (4)</p>
(b)	<p>e.g.</p>	<p>1M1 1A1</p> <p>2M1 2A1 (4)</p>
(c)	<p>Four workers e.g. between $17 < \text{time} < 18$, four activities I, J, F and G need to be happening</p>	<p>1B1 2B1 (2)</p>
(d)	<p>e.g.</p>	<p>M1 1A1</p> <p>2A1 3A1 (4)</p> <p>14 marks</p>
Notes		
<p>a1M1: All top boxes complete, values generally increasing left to right, condone one rogue value. a1A1: CAO</p>		

Question Number	Scheme	Marks																																																	
Notes for Question 7 continued																																																			
<p>a2M1: All bottom boxes complete, values generally decreasing right to left, condone one rogue value. Condone missing 0 or 29 for the M only.</p> <p>a2A1: CAO</p> <p>b1M1: Not a scheduling diagram. At least 9 activities including at least 4 floats.</p> <p>b1A1: Critical activities dealt with correctly.</p> <p>b2M1: All 12 activities including at least 7 floats.</p> <p>b2A1: Non-critical activities dealt with correctly.</p> <p>c1B1: A correct answer of 4, with the correct activities (IJFG) and some mention of time.</p> <p>c2B1: A correct statement with details of time and activities. Note strict inequality on time – note that on day 18 is equivalent to $17 < \text{time} < 18$.</p> <p>d1M1: Not a cascade chart. 4 ‘workers’ used at most. At least 7 activities.</p> <p>d1A1: ABCIJK correct. A – 7; B – 8; C – 8; I – 9; J – 9; K – 5. B completed by its late finish time (9).</p> <p>d2A1: 4 workers. All 12 activities present (just once). Condone one error either precedence, or activity length, on activities D, E, F, G, H, L.</p> <p>d3A1: 4 workers. All 12 activities present (just once). No errors on activities D, E, F, G, H, L</p>																																																			
<table border="1"> <thead> <tr> <th>Activity</th> <th>Duration</th> <th>I.P.A.</th> <th></th> <th>Activity</th> <th>Duration</th> <th>I.P.A.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>7</td> <td>-</td> <td></td> <td>G</td> <td>3</td> <td>C D</td> </tr> <tr> <td>B</td> <td>8</td> <td>-</td> <td></td> <td>H</td> <td>4</td> <td>A G</td> </tr> <tr> <td>C</td> <td>8</td> <td>A</td> <td></td> <td>I</td> <td>9</td> <td>C D E</td> </tr> <tr> <td>D</td> <td>6</td> <td>B</td> <td></td> <td>J</td> <td>9</td> <td>C D E</td> </tr> <tr> <td>E</td> <td>5</td> <td>B</td> <td></td> <td>K</td> <td>5</td> <td>F H I J</td> </tr> <tr> <td>F</td> <td>10</td> <td>B</td> <td></td> <td>L</td> <td>4</td> <td>F J</td> </tr> </tbody> </table>			Activity	Duration	I.P.A.		Activity	Duration	I.P.A.	A	7	-		G	3	C D	B	8	-		H	4	A G	C	8	A		I	9	C D E	D	6	B		J	9	C D E	E	5	B		K	5	F H I J	F	10	B		L	4	F J
Activity	Duration	I.P.A.		Activity	Duration	I.P.A.																																													
A	7	-		G	3	C D																																													
B	8	-		H	4	A G																																													
C	8	A		I	9	C D E																																													
D	6	B		J	9	C D E																																													
E	5	B		K	5	F H I J																																													
F	10	B		L	4	F J																																													

Question Number	Scheme	Marks
8.	Minimise $(C) = 660x + 600y$ Subject to: $20x + 50y \geq 15000 \Rightarrow 2x + 5y \geq 1500$ $\frac{2}{5}(x + y) \leq x \leq \frac{3}{5}(x + y)$ Which simplifies to $2y \leq 3x$ and $2x \leq 3y$ or equivalent. $(x, y \geq 0)$	B1 1M1 1A1 2M1 2A1, 3A1 <p style="text-align: right;">6 marks</p>
Notes		
1B1: CAO Expression correct and 'minimise'. Accept working in £'s $(C) = 6.6x + 6y$ 1M1: Condone incorrect inequality (but not equals) sign seen here. 1A1: CAO Must have $2x$, $5y$ and 1500 . 2M1: Correct method, dealing with both 40% and 60% of total items – need to see both $\frac{2}{5}(x + y)$ and $\frac{3}{5}(x + y)$ as part of an inequality (not an equation). 2A1: CAO for the 40% inequality – accept strict inequality 3A1: CAO for the 60% inequality – accept strict inequality - may be combined into one inequality SC: if 2A0 and 3A0 then award SCA1A0 for either $k(2y) \leq k(3x)$ or $k(2x) \leq k(3y)$ for any positive integer k .		

