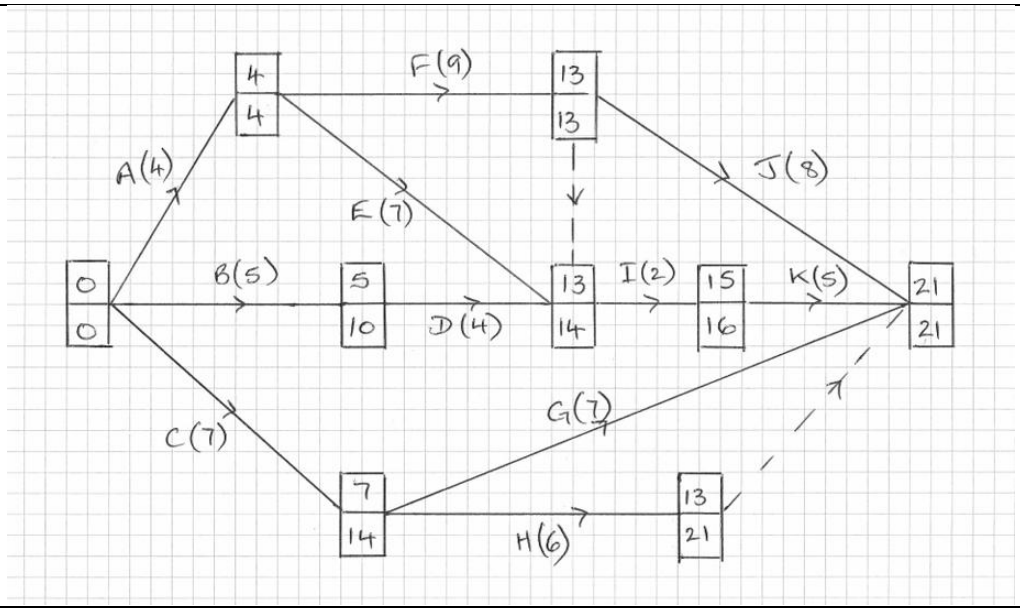
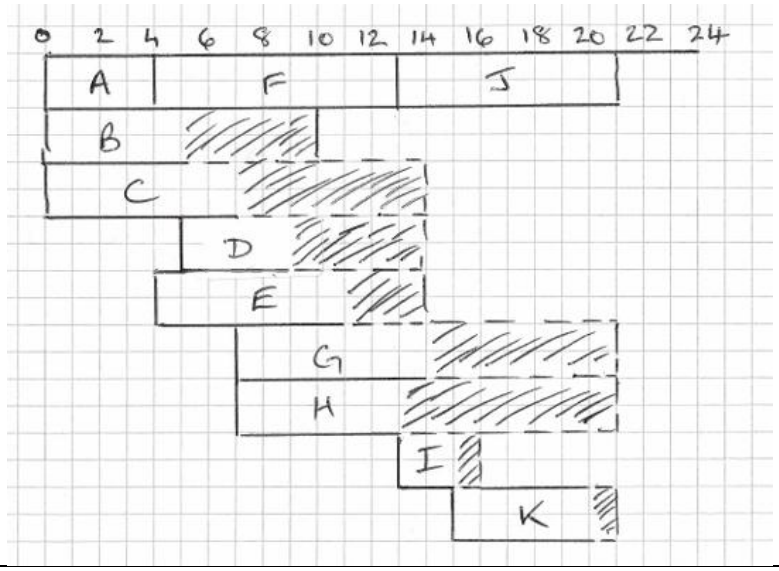
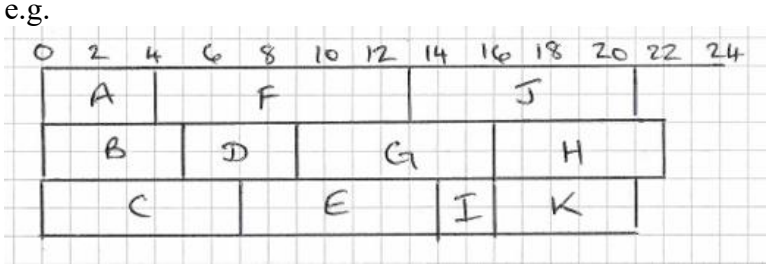
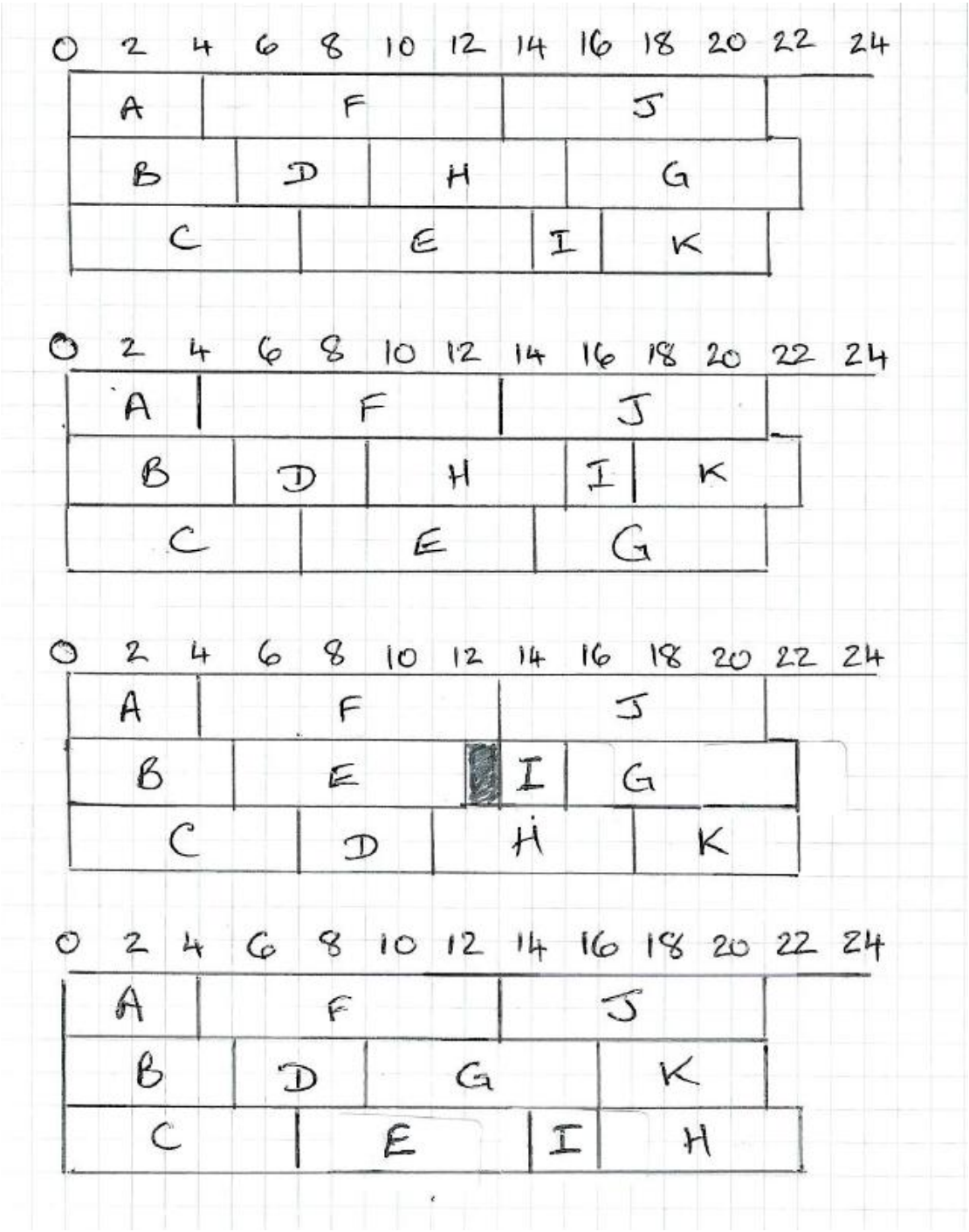
Question Number	Scheme	Marks
6(a)		M1 A1 M1 A1 **(4)**
(b)	21 (hours)	B1 **(1)**
(c)	$\frac{4+5+7+4+7+9+7+6+2+5+8}{21} = \frac{64}{21} \approx 3.048$ so at least 4 workers required	M1 A1 **(2)**
(d)		M1 A1 A1 A1 **(4)**
(e)	e.g.  see alternatives below	M1 A1ft A1 **(3)**
		14 marks

<table>
<tr><th></th><th>Notes for Question 6</th><th></th></tr>
<tr><td>a1M1</td><td>All top boxes complete, values generally increasing in the direction of the arrows (‘left to right’), condone one rogue value which is a number in a top box greater than the subsequent value</td><td></td></tr>
<tr><td>a1A1</td><td>CAO (top boxes)</td><td></td></tr>
<tr><td>a2M1</td><td>All bottom boxes complete, values generally decreasing in the opposite direction of the arrows (‘right to left’), condone one rogue value which is a number in a bottom box greater than the previous value. Condone missing 0 and/or their 21 (at the end event) for the M mark only</td><td></td></tr>
<tr><td>a2A1</td><td>CAO (bottom boxes)</td><td></td></tr>
<tr><td>b1B1</td><td>CAO</td><td></td></tr>
<tr><td>c1M1</td><td>64 (+/-9)/”21” a calculation using the sum of the activities (accept a total in the range 55 – 73) divided by their finish time or sight of awrt 3.05 (accept 3.04 truncated)</td><td></td></tr>
<tr><td>c1A1</td><td>CAO – 4 note an answer of 4 with no working is M0</td><td></td></tr>
<tr><td>d1M1</td><td>Cascade Chart not a schedule. At least 7 activities including at least 4 floats</td><td></td></tr>
<tr><td>d1A1</td><td>Critical activities (AFJ) correct and at least 3 non-critical activities correct</td><td></td></tr>
<tr><td>d2A1</td><td>At least 6 non-critical activities correct</td><td></td></tr>
<tr><td>d3A1</td><td>CAO All 11 activities present (just once). No errors.</td><td></td></tr>
<tr><td>e1M1</td><td>Schedule not a cascade (Gantt) chart. 3 ‘workers’ used at most and at least 8 activities placed.</td><td></td></tr>
<tr><td>e1A1ft</td><td>All 11 activities present (just once) with a finish time of 22 (ft their end time + 1). Condone at most two errors. An activity can give rise to at most three errors; one on duration, one on time interval and only one on IPA</td><td></td></tr>
<tr><td>e2A1</td><td>3 workers. All 11 activities present (just once). No errors.
The table shows the possible time intervals to allow the project to be completed by 3 workers in 22 hours
<table>
<tr><th>Activity</th><th>Time Interval</th><th>IPA</th><th>Duration</th></tr>
<tr><td>A</td><td>0 to 5</td><td>-</td><td>4</td></tr>
<tr><td>B</td><td>0 to 6</td><td>-</td><td>5</td></tr>
<tr><td>C</td><td>0 to 8</td><td>-</td><td>7</td></tr>
<tr><td>D</td><td>5 to 15</td><td>B</td><td>4</td></tr>
<tr><td>E</td><td>4 to 15</td><td>A</td><td>7</td></tr>
<tr><td>F</td><td>4 to 14</td><td>A</td><td>9</td></tr>
<tr><td>G</td><td>7 to 22</td><td>C</td><td>7</td></tr>
<tr><td>H</td><td>7 to 22</td><td>C</td><td>6</td></tr>
<tr><td>I</td><td>13 to 17</td><td>D, E, F</td><td>2</td></tr>
<tr><td>J</td><td>13 to 22</td><td>F</td><td>8</td></tr>
<tr><td>K</td><td>15 to 22</td><td>I</td><td>5</td></tr>
</table></td><td></td></tr>
</table>

Possible alternative schedules for (e). This is not exhaustive.



Note: it is possible to swap J with I and K (I starts at 14) in the top diagram (and in the main scheme), J with G in the second diagram, J with I and G (J starts at 13) in the third diagram and J with I and H (I starts at 14) in the bottom diagram.