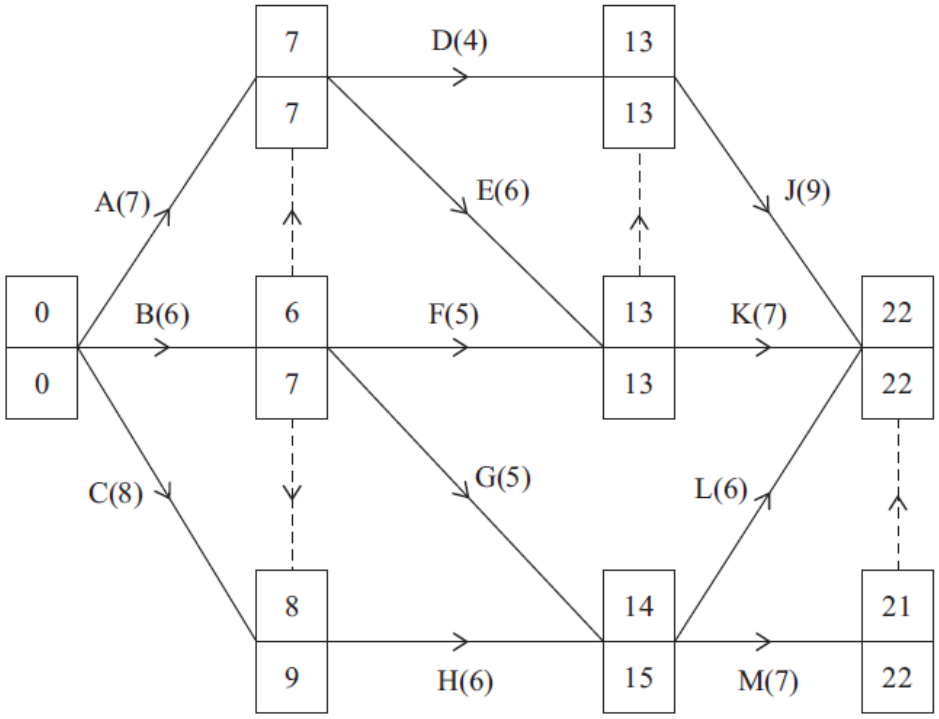
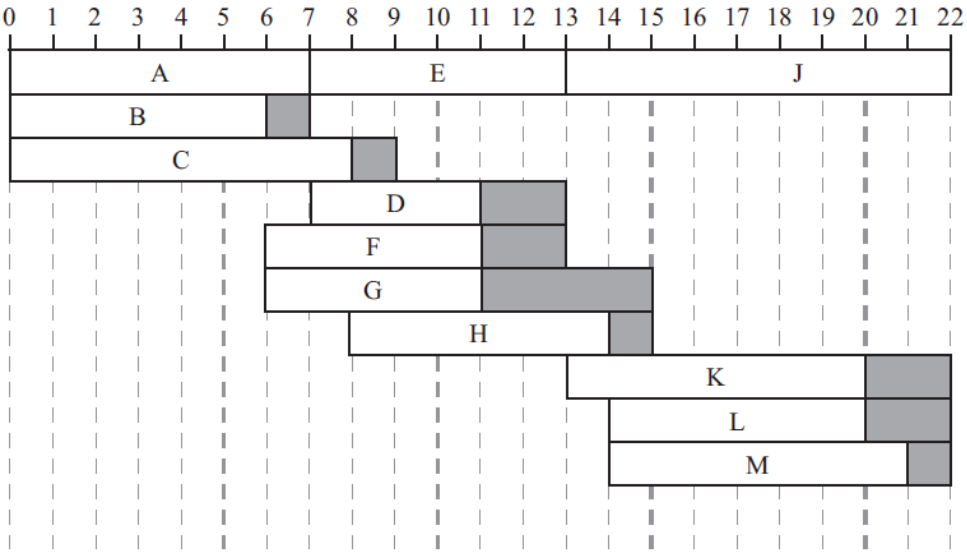
Question Number	Scheme	Marks
7.		
(a)		M1 A1 M1 A1 (4)
(b)	Float $22 - 14 - 7 = 1$	B1 (1)
(c)	$\frac{7+6+8+4+6+5+5+6+9+7+6+7}{22} = \frac{76}{22} = 3.45...$ 4 workers required	M1 A1 (2)
(d)		M1 A1 A1 A1 (4)
(e)	At time $10 < t < 11$ activities D, E, F, G and H must be happening. Therefore five workers required	M1 A1 (2)
(f)	e.g. H will now finish at time 17, which is the start time for L and M. M will finish at time 24 delaying the project by 2 days.	M1 A1 (2)

		15 marks
	Notes for Question 7	
a1M1	**All** top boxes complete, values generally increasing in the direction of the arrows ('left to right'), condone one rogue	
a1A1	CAO (top boxes)	
a2M1	**All** bottom boxes complete, values generally decreasing in the opposite direction of the arrows ('right to left'), condone one rogue. Condone missing 0 and/or their 22 (at the end event) for the M mark only	
a2A1	CAO (bottom boxes)	
b1B1	CAO Correct calculation seen	
c1M1	(76 +/-9)/"22" a calculation using the sum of the activity times divided by their finish time or sight of awrt 3.45	
c1A1	CAO 4 (workers), no incorrect working seen. An answer of 4 with no working is M0	
d1M1	Cascade Chart not a schedule. At least 9 activities including at least 4 floats	
d1A1	Critical activities and at least 3 non-critical activities correct	
d2A1	At least 7 non-critical activities correct	
d3A1	CAO All 12 activities present (just once). No errors**.**	
e1M1	Either a statement with the correct number of workers (5) and stating the correct activities (D, E, F, G and H) with any numerical time stated **or** the correct number of workers (5) and a time in the interval $10 \leq t \leq 11$ – mark the numerical value only not their use of the words 'day/time' (or equivalent)	
e1A1	A completely correct statement with details of both time **and** activities. Candidates must give a time within the correct interval of $10 < t < 11$, e.g. 10.5 (or 'on/during day 11') and state the correct activities (D, E, F, G and H). Please note inequalities for the time interval implying a time of 10 is incorrect. Answers given as an interval of time are acceptable provided the time interval stated is correct for all its possible values (e.g. time 10 – 11 or 'between 10 and 11' is A0). A completely correct statement with an additional incorrect statement scores A0 (so do not ignore subsequent working)	
f1M1	Considers the effect of the delay on H and hence on (L and) M. Could refer to start/ finish times 11/17 and 24, but, if purely numerical, there must be at least two of these three figures.	
f1A1	CAO – project delayed by 2 days with explicit reference to a time for H (start 11 or finish 17) and explicit reference to M and time 24.	