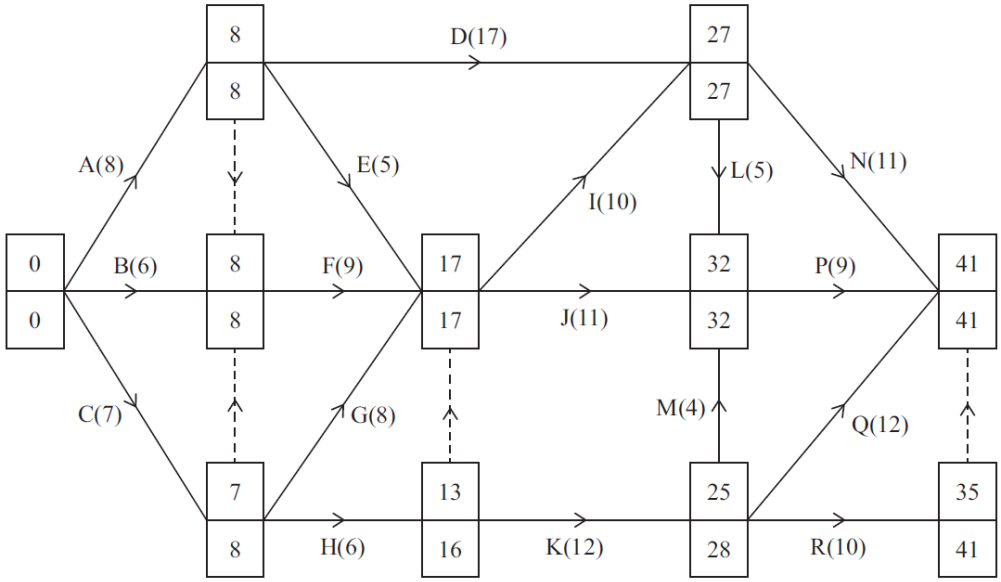
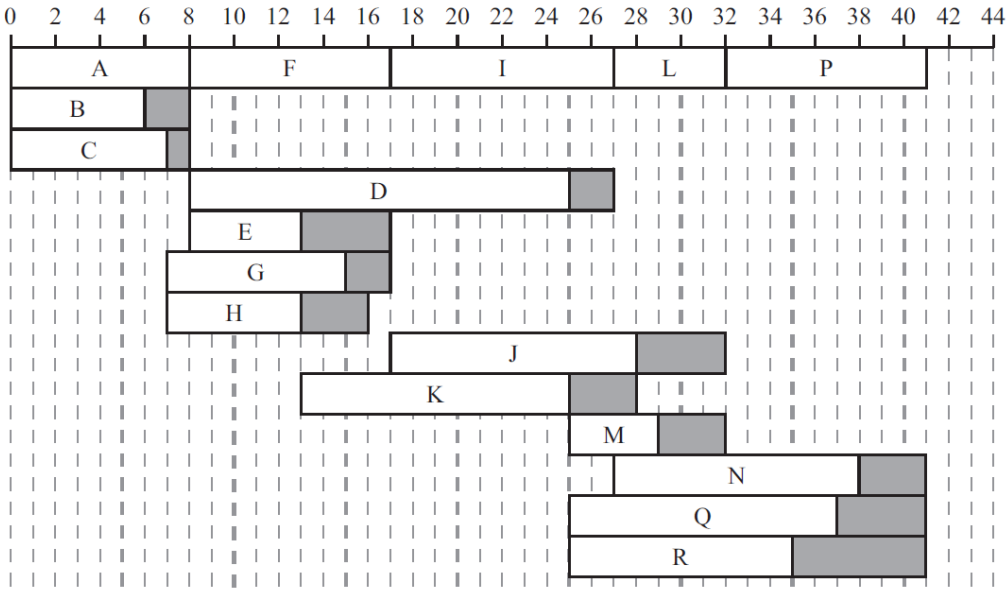
Question Number	Scheme	Marks
7.(a)	Dummy is required to uniquely define Activity Q and Activity R	B1 **(1)**
(b)		M1 A1 M1 A1 **(4)**
(c)	A F I L P	B1 **(1)**
(d)	28 – 13 – 12 = 3 (days)	M1 A1 **(2)**
(e)		M1 A1 A1 A1 **(4)**
(f)	At time $12 < t < 13$ activities D, E, F, G and H must be happening. Therefore five workers required	M1 A1 **(2)**
		14 marks

Notes for Question 7		
a1B1	CAO – accept equivalent explanations (e.g. to allow two activities to start at the same event and end at the same event – see examples)	
b1M1	**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	
b1A1	CAO (top boxes)	
b2M1	**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 41 (at the end event) for the M mark only	
b2A1	CAO (bottom boxes)	
c1B1	CAO	
d1M1	Their "Late End Time K" – "Early Start Time K" – 12 or a correct equivalent calculation e.g. 41 – 7 – 6 – 12 – 4 – 9 (= 3)	
d1A1	CAO	
e1M1	Cascade Chart not a schedule. At least 11 activities including at least 6 floats	
e1A1	Critical activities (AFILP) correct and at least 3 non-critical activities correct	
e2A1	At least 9 non-critical activities correct	
e3A1	CAO All 17 activities present (just once). No errors**.**	
f1M1	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 $12 \leqslant t \leqslant 13$ – mark the numerical value only not their use of the words 'day/time' (or equivalent)	
f1A1	A completely correct statement with details of both time **and** activities. Candidates must give a time within the correct interval of $12 < t < 13$, e.g. 12.5 (or 'on/during day 13') or $t \in (12, 13)$ and state the correct activities (D, E, F, G and H). (If using set notation there must be a statement linking time to (12, 13)) Please note inequalities for the time interval implying a time of 12 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 12 – 13 or 'between 12 and 13' is A0). A completely correct statement with an additional incorrect statement scores A0 (so do not ignore subsequent working)	