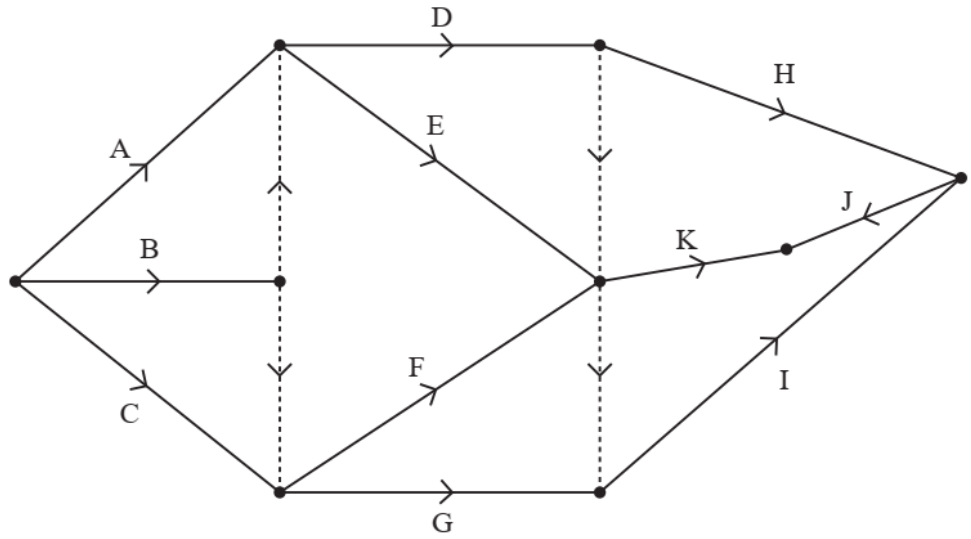
5. (a)	e.g.  	M1 A1 A1 A1 A1 **(5)**
(b)(i)	24 (hours)	B1
(b)(ii)	C, F, I and J	B1
(b)(iii)	Total float for G is 3 (hours) Total float for K is 1 (hour)	B1 B1 **(4)**
		9 marks

Notes for Question 5

Condone lack of, or incorrect, numbered events throughout. 'Dealt with correctly' means that the activity starts from the correct event but need not necessarily finish at the correct event, e.g. 'D dealt with correctly' requires the correct precedences for this activity, i.e. A and B labelled correctly and leading into the same node and D starting from that node but do not consider the end event for D. **Activity on node is M0**

If an arc is not labelled, for example, if the arc for activity C is not labelled (but the arc is present) then this will lose the first A mark and the final (CSO) A mark – they can still earn the second A mark on the bod. If two or more arcs are not labelled then mark according to the scheme. Assume that a solid line is an activity which has not been labelled rather than a dummy (even if in the correct place for where a dummy should be)

Ignore incorrect or lack of arrows on the activities for the first four marks only

a1M1: At least eight activities (labelled on arc), one start and at least two dummies placed
a1A1: Activities A, B, C **and** two of activities D, E, F or G dealt with correctly (so at least one dummy (+ correct arrow) required)
a2A1: Activities D, E, F and G dealt with correctly – so first two dummies (+ correct arrows) are required for this mark
a3A1: Activities H and I dealt with correctly (so must have the final two dummies + correct arrows)
a4A1: cso – activities J and K dealt with corrctly. All arrows correctly placed for each activity with one finish and at most four dummies. Note that some candidates are drawing the graph non-planar which is fine

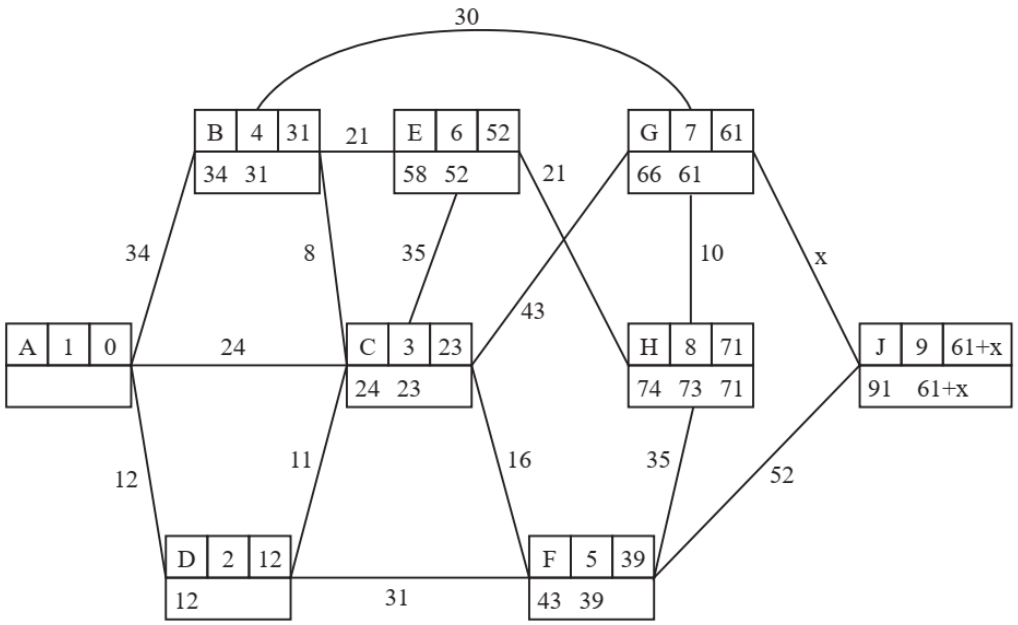
Please check all arcs carefully for arrows – if there are no arrows on any dummies then M1 only. **Note that additional (but unnecessary) 'correct' dummies that still maintain precedence for the network should only be penalised with the final A mark if earned**

bi1B1: cao (24)
bii1B1: cao (C, F, I and J with no others)
biii1B1: cao (total float for G as 3)

biii2B1: cao (total float for K as 1)

Useful for checking (a):

Activity	A	B	C	D	E	F	G	H	I	J	K
IPA	-	-	-	A, B	A, B	B, C	B, C	D	D, E, F, G	H, I	D, E, F

6.(a)	 Fastest time: 71 (minutes) Quickest route: ADCBGH	M1 A1 (DCB) A1 (FE) A1ft (GH) A1ft A1 **(6)**
(b)	AD + EH = 12 + 21 = 33*	M1 A1
	A(DCB)E + D(CBG)H = 52 + 59 = 111	A1
	A(DCBG)H + D(CB)E = 71 + 40 = 111	A1
	$(383+x)+33\ldots440 \Rightarrow x\ldots..$	depM1
	$24,, x<30$	A1 **(6)**
(c)	e.g. ABCEBGCDADFJGHEHFCA	B1 **(1)**
(d)	If a direct road DH opens then only A and E are odd therefore the shortest inspection route is (383 + x) + 25 (DH) + 52 (AE)	M1
	460 + x = 488 therefore x = 28	A1 **(2)**
		15 marks
	Notes for Question 6	

In (a) it is important that all values at each node are checked very carefully – the order of the working values must be correct for the corresponding A mark to be awarded e.g. at H the working values must be 74 73 71 in that order (so 74 71 73 is incorrect)
It is also important that the order of labelling is checked carefully. The order of labelling must be a strictly increasing sequence – so 1, 2, 3, 3, 4, … will be penalised once (see notes below) but 1, 2, 3, 5, 6, … is fine. Errors in the final values and working values are penalised before errors in the order of labelling