

Critical Path Analysis – Q1a [MEI/OCR/Edx](14/12/23)

(i) Draw an activity-on-arc network to represent the following project, and establish the earliest and latest event times.

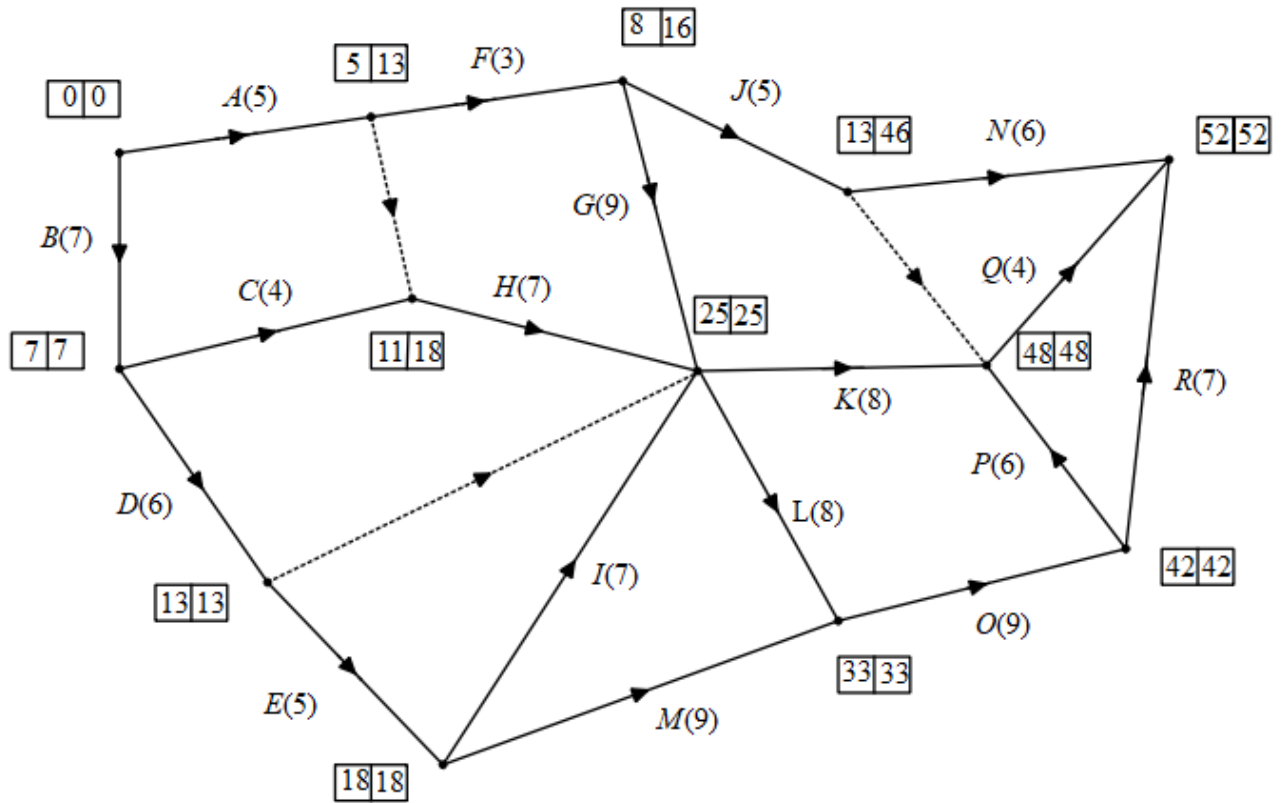
Activity	Immediate predecessors	Duration
A	-	5
B	-	7
C	B	4
D	B	6
E	D	5
F	A	3
G	F	9
H	A,C	7
I	E	7
J	F	5
K	D,G,H,I	8
L	D,G,H,I	8
M	E	9
N	J	6
O	L,M	9
P	O	6
Q	J,K,P	4
R	O	7

(ii) State the critical path(s).

(iii) The duration of each activity can be reduced at a cost (with the amount of possible reduction varying by activity). If the project is to be completed as quickly as possible, describe how the required extra cost can be established.

Solution

(i)



(ii) Minimum completion time is 52.

Critical path is BDEILOPQ

(iii) Create the network based on the minimum durations, and then increase the durations as far as possible for the non-critical activities.