

(4) Draw the activity immediately preceding two dummies.

Activity	Immediately preceding activities
A	-
B	-
C	-
D	B
E	B, C
F	B, C
G	F
H	F
I	G, H
J	I

(b) Explain why each of the two dummies is necessary.

(5)

(2)

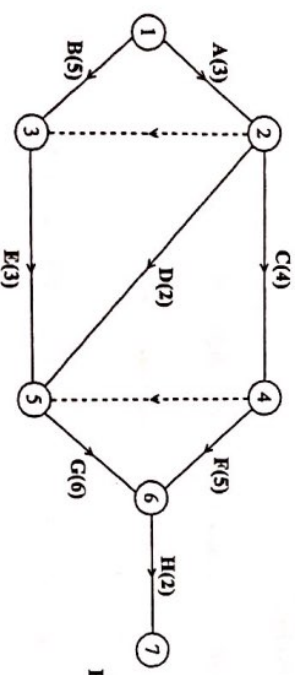


Figure 5

Figure 5 is the activity network relating to a building project. The number in brackets on each arc gives the time taken, in days, to complete the activity.

(a) Explain the significance of the dotted line from event ② to event ③.

(2)

(b) Complete the precedence table in the answer booklet.

(3)

(c) Calculate the early time and the late time for each event, showing them on the diagram in the answer booklet.

(4)

(d) Determine the critical activities and the length of the critical path.

(2)

(e) On the grid in the answer booklet, draw a cascade (Gantt) chart for the project.

(4)

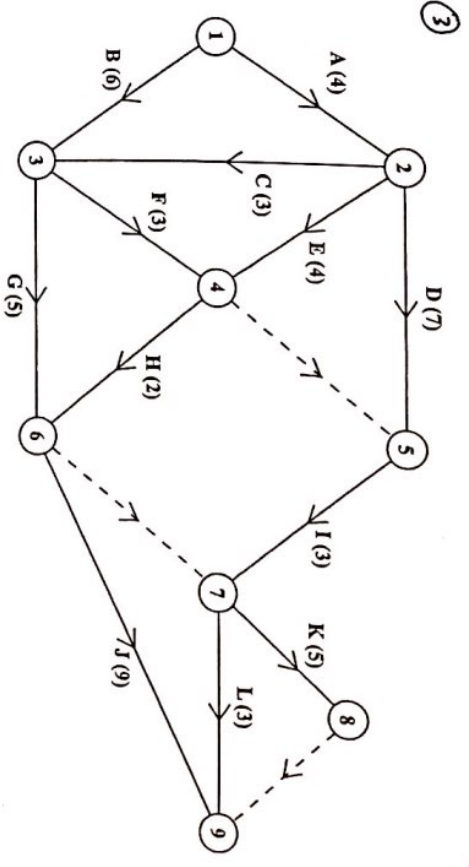


Figure 7

The network in Figure 7 shows the activities that need to be undertaken to complete a maintenance project. The activities are represented by the arcs. The number in brackets on each arc gives the time, in days, to complete the activity. The numbers in circles are the events.

Each activity requires one worker. The project is to be completed in the shortest possible time.

(a) Complete the precedence table for this network in the answer book.

(3)

(b) Explain why each of the following is necessary.

- (i) The dummy from event 6 to event 7.
- (ii) The dummy from event 8 to event 9.

(3)

(c) Complete Diagram 2 in the answer book to show the early and the late event times.

(4)

(d) State the critical activities.

(2)

(e) Calculate the total float on activity K. You must make the numbers used in your calculation clear.

(2)

(f) Calculate a lower bound for the number of workers needed to complete the project in the minimum time.

(2)

(Total 16 marks)

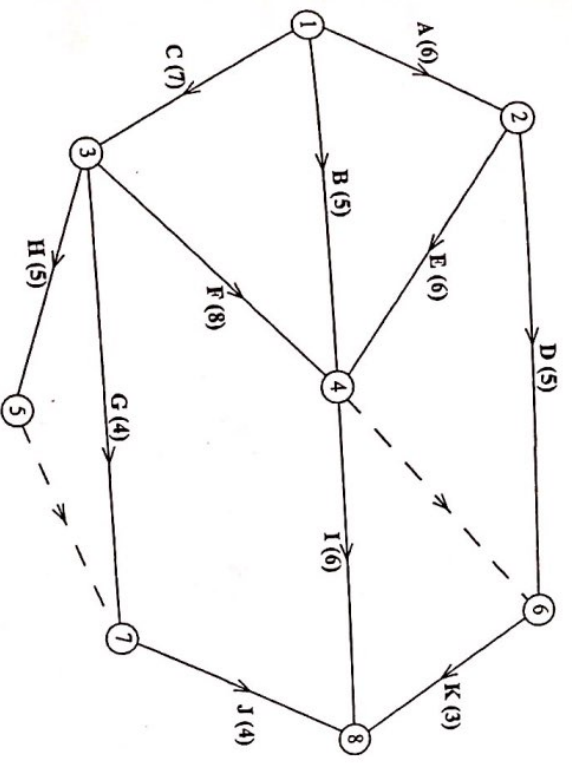


Figure 7

A project is modelled by the activity network shown in Figure 7. The activities are represented by the arcs. The number in brackets on each arc gives the time required, in hours, to complete the activity. The numbers in circles are the event numbers. Each activity requires one worker.

- (a) Explain the significance of the dummy activity
 - (i) from event 4 to event 6,
 - (ii) from event 5 to event 7
- (b) Calculate the early time and the late time for each event. Write these in the boxes in the answer book.
- (c) Calculate the total float on each of activities D and G. You must make the numbers you use in your calculations clear.
- (d) Calculate a lower bound for the minimum number of workers required to complete the project in the minimum time.
- (e) On the grid in your answer book, draw a cascade (Gantt) chart for this project.

(Total 16 marks)

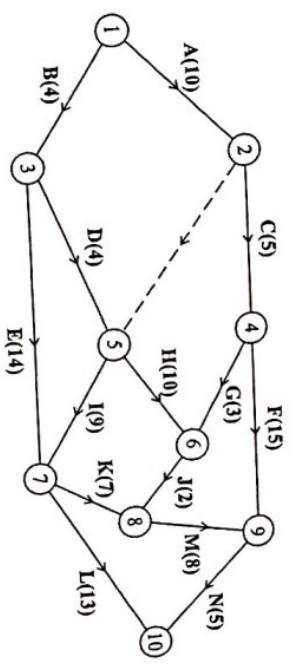


Figure 5

The network in Figure 5 shows the activities involved in a process. The activities are represented by the arcs. The number in brackets on each arc gives the time, in days, taken to complete the activity.

- (a) Calculate the early time and the late time for each event, showing them on the diagram in the answer book.
 - (b) Determine the critical activities and the length of the critical path.
 - (c) Calculate the total float on activities F and G. You must make the numbers you used in your calculation clear.
 - (d) On the grid in the answer book, draw a cascade (Gantt) chart for the process.
- Given that each task requires just one worker,
- (e) use your cascade chart to determine the minimum number of workers required to complete the process in the minimum time. Explain your reasoning clearly.

(Total 16 mark)

ANSWERS
NA
Vidkeo.

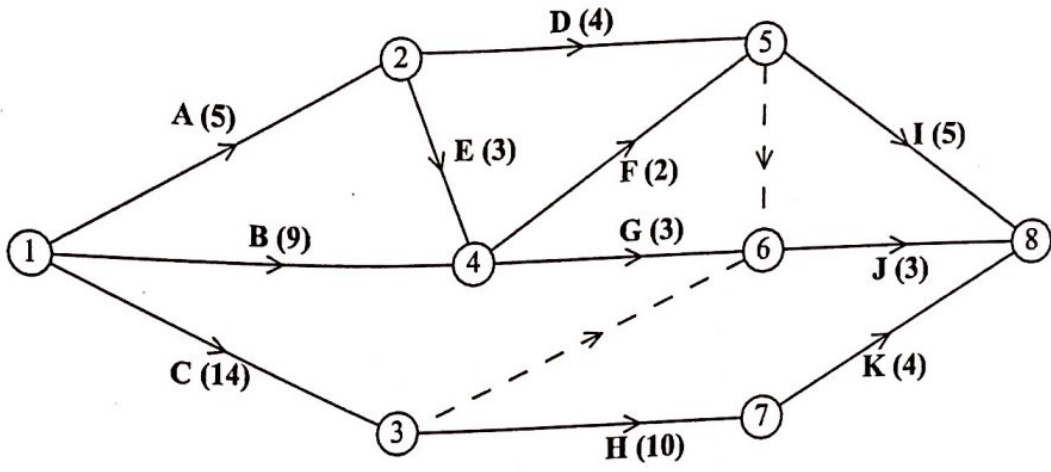


Figure 5

Figure 5 is the activity network relating to a development project. The activities are represented by the arcs. The number in brackets on each arc gives the time, in days, to complete the activity. Each activity requires one worker. The project is to be completed in the shortest possible time.

- (a) Complete the precedence table in the answer book. (2)
- (b) Complete Diagram 1 in the answer book to show the early event times and late event times. (4)
- (c) Calculate the total float for activity E. You **must** make the numbers you use in your calculation clear. (2)
- (d) Calculate a lower bound for the number of workers needed to complete the project in the minimum time. You must show your working. (2)
- (e) Schedule the activities using the minimum number of workers so that the project is completed in the minimum time. (4)

(Total 14 marks)