7.

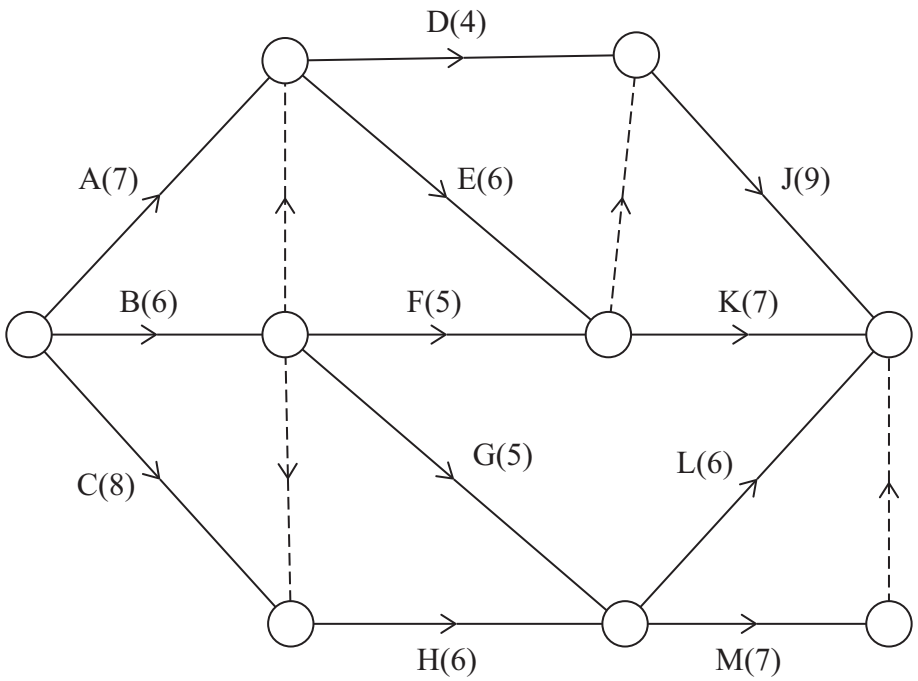


Figure 3

A project is modelled by the activity network shown in Figure 3. 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 exactly one worker. The project is to be completed in the shortest possible time.

(a) Complete the diagram in the answer book to show the early event times and the late event times.

(4)

(b) Calculate the total float for activity M

(1)

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

(2)

(d) Draw a Gantt (cascade) chart on the grid in the answer book.

(4)

(e) Use the Gantt chart to determine the minimum number of workers required to complete the project in the minimum time. You must make specific reference to the number of workers, activities and times.

(2)

The start of activity H is now delayed by 3 days.

(f) Determine what effect this has on the completion time for the project, justifying your answer.

(2)

(Total for Question 7 is 15 marks)