Write your answers in the D1 answer book for this paper.

1.

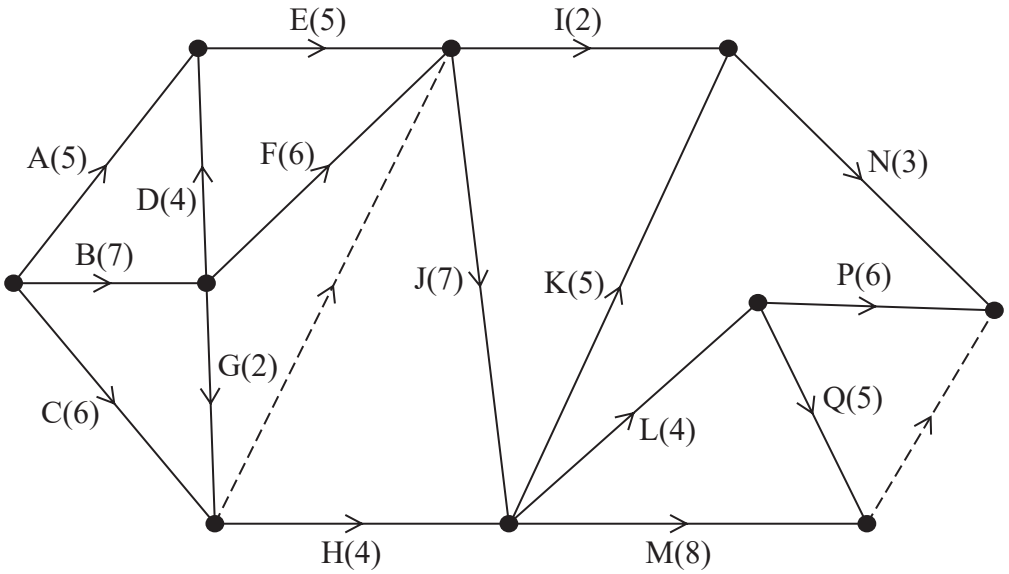


Figure 1

A project is modelled by the activity network shown in Figure 1. 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 Diagram 1 in the answer book to show the early event times and the late event times.

(4)

(b) Calculate the maximum number of days by which activity H could be delayed without lengthening the completion time of the project. You must make the numbers used in your calculation clear.

(1)

(c) Calculate a lower bound for the number of workers needed to complete the project in the minimum time. You must show your working.

(2)

(d) Schedule the activities on Grid 1 in the answer book, using the minimum number of workers, so that the project is completed in the minimum time.

(3)

(Total for Question 1 is 10 marks)