3.

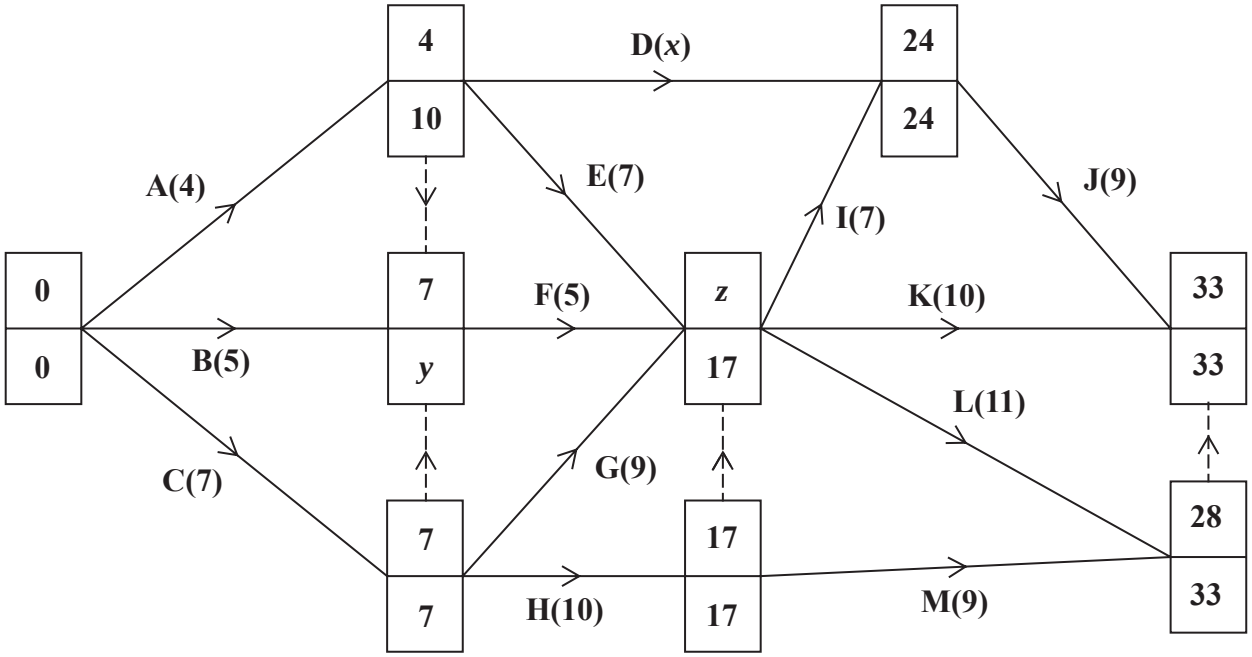


Figure 2

The network in Figure 2 shows the activities that need to be undertaken by a company to complete a project. Each activity is represented by an arc and the duration, in days, is shown in brackets. Each activity requires one worker. The early event times and late event times are shown at each vertex.

The total float on activity D is twice the total float on activity E.

(a) Find the values of x, y and z.

(3)

(b) Draw a cascade chart for this project on Grid 1 in the answer book.

(4)

(c) Use your cascade chart to determine a lower bound for the minimum number of workers needed to complete the project in the shortest possible time. You must make specific reference to time and activities. (You do not need to provide a schedule of the activities.)

(2)

(Total 9 marks)