

Prof Ashok Gupta

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- December-2018

M.Tech. - 1<sup>st</sup> Semester

COURSE CODE: 10M11CE113

MAX. MARKS:35

COURSE NAME: Construction Planning and Control

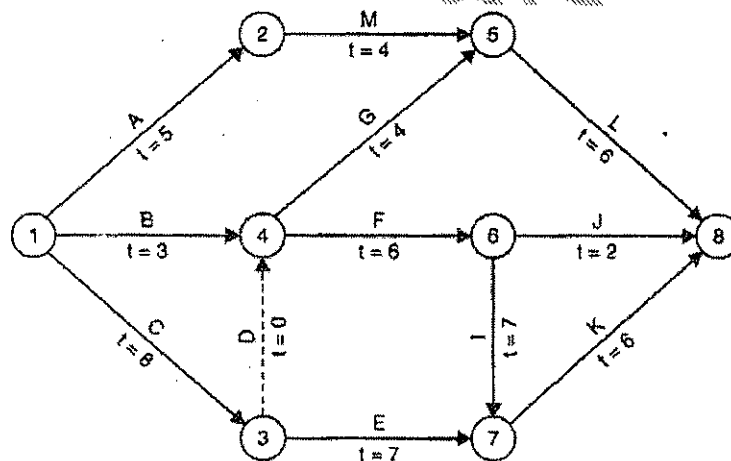
COURSE CREDITS: 03

MAX. TIME: Two Hours

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

**Q. 1** The network of a certain project is shown in Fig.1 with the estimated durations for various activities. Determine the following: (8)

- Earliest event time and latest event time.
- Earliest and latest start and finish times of each activity.
- Total and free floats for each activity.
- Critical path for network.



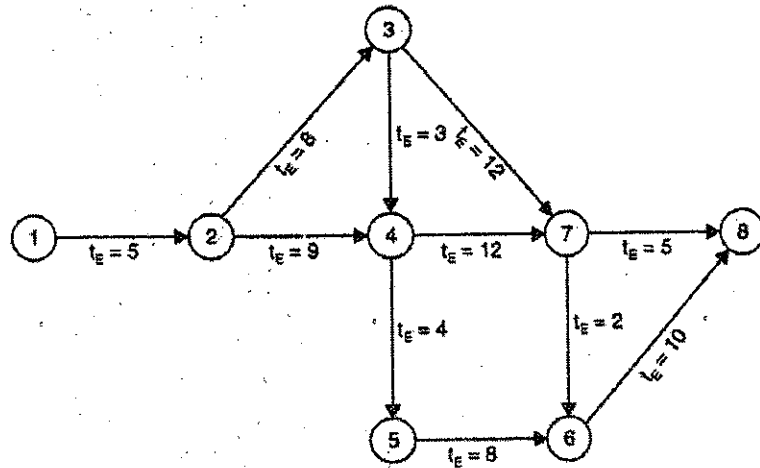
**Fig. 1**

**Q.2** A project consists of 16 activities having their predecessor relationships as follows: (5)

- A is the first activity of the project.
- B, C and D follow A and can be done concurrently.
- E and G cannot begin until C is completed, and can be performed simultaneously.
- F is the immediate successor to activities B and E.
- H and K run in parallel, and both succeed G.
- L succeeds F and H.
- I and J are immediate successor activities to activity D.
- M and N are immediate successor to I and K. However, both M and N can be performed concurrently.
- Activities O and P are the last activities. Activity O is the immediate successor to N and L. Activity P is the immediate successor to M and J.

Draw the network and number the events.

**Q.3** From the network shown in fig.2, determine the slack for various events, if the scheduled date of completion of the project is 36 days. Present the computations in tabular form. (5)

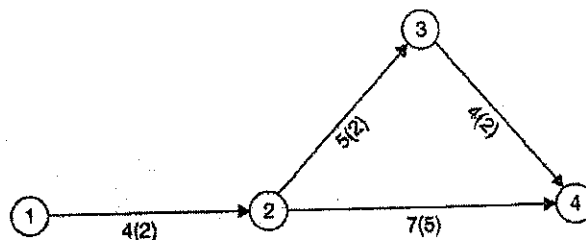


**Fig. 2**

**Q.4** Following table gives the data about durations and costs of various activities on the network shown in fig.3 (7)

Activity	Normal duration (weeks)	Normal cost (Rs.)	Crash duration (weeks)	Crash cost (Rs.)
1-2	4	4000	2	12000
2-3	5	3000	2	7500
2-4	7	3600	5	6000
3-4	4	5000	2	10000

The project overhead costs are Rs. 2000 per week. Find the optimum duration and the cost associated with it. Also, draw the least cost network.



**Fig. 3**

**Q. 5** Answer the following:

**(2x5=10)**

- i. What is earned value analysis? How it can be used as project control tool, show by using an example.
- ii. What is work break down structure in network planning? Explain by using example.
- iii. What do you understand by delay in projects? Discuss the common reasons of delay in construction projects.
- iv. Discuss the resources allocation problem in brief. What are the methods of solving the problem?
- v. Show the variation of project cost with time duration. What do you understand by indirect and direct project cost? Give examples.

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