

Total No. of printed pages = 6

CE 131802

Roll No. of candidate

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2020

B.Tech. 8th Semester End-Term Examination

Civil Engineering

CONSTRUCTION PROJECT MANAGEMENT

Full Marks – 50

Time – Two hours

The figures in the margin indicate full marks
for the questions.

Answer Question No. 1 and any *three* from the rest.

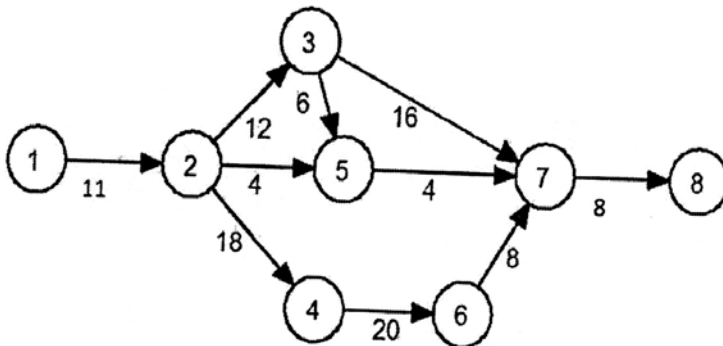
1. Fill in the blanks (*any five*) : (5 × 1 = 5)
 - (i) An activity of a project is denoted by an _____ on the network.
 - (ii) If t_0 , t_p and t_m are the optimistic, pessimistic and most likely time estimates of an activity respectively, the expected time t of the activity will be _____.
 - (iii) If the float is positive and the activity is delayed by a period equal to its total float, the completion of project is _____.
 - (iv) The beginning and end of an activity are called _____.

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- (v) Activities of a project are shown on bar charts by _____ lines.
- (vi) Critical path lies along the activities having total float _____.
- (vii) A dummy activity is represented by a _____ line.
- (viii) If the float of an activity is zero, the activity is _____ and any delay in its performance will delay the whole project.
- (ix) The system of organization introduced by F.W. Taylor is known as _____ organisation.
- (x) Direct cost required to complete the activity in normal time is _____.

2. Answer the following questions :

- (a) The network for a certain project is shown in the figure below along with the estimated time of completion of each activity. Compute EST, EFT, LST, LFT, F_T , F_F and F_L . Also locate the critical path on the network. (12)

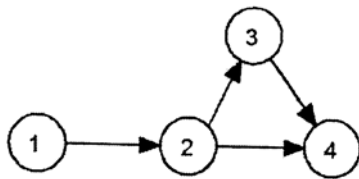


- (b) Discuss the characteristics of projects to be analysed by CPM or PERT. (3)

3. Answer the following questions :

- (a) The figure given shows the network for a project. The data for the duration and cost of each activity are given in the table below. (10)

The indirect cost of the project is Rs. 5,000/- per day. Determine the optimum duration of the project and the corresponding minimum cost. Draw the time scale version of the network at each stage.



Activity	Normal duration (days)	Normal cost (Rs.)	Crash duration (days)	Crash cost (Rs.)
1-2	4	8,000	3	12,000
2-3	5	6,000	2	15,000
2-4	7	7,200	5	10,800
3-4	4	10,000	2	20,000

- (b) Briefly explain the steps required in Time-Cost optimization. (5)

4. Answer the following questions :

- (a) Draw the network for a project having four activities labelled A, B, C, and D and related as below:

- (i) Activity A and activity B can be done concurrently.

- (ii) Activity A is the immediate predecessor of activity C.
 - (iii) Activity B is the immediate predecessor of activity D.
 - (iv) Activities C and D are the last activities.(4)
- (b) Draw the network of a project having seven activities. Activities A, B and C run concurrently. Activities predecessor relationships are as follows :

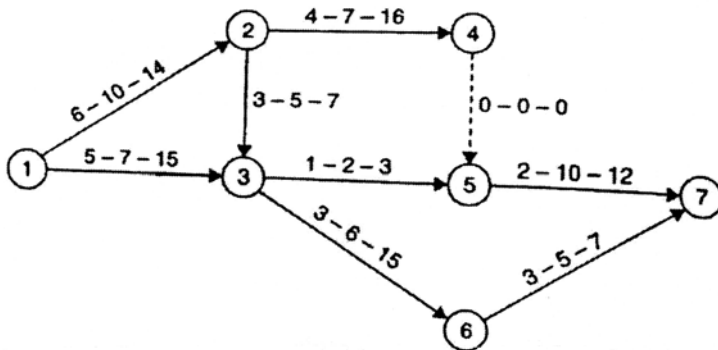
Activity	Immediate Predecessor
D	A
E	B
F	C

Activity G is the last operation of the project, and is also immediate successor to D, E and F.(6)

- (c) State the difference between PERT and CPM technique. (5)

5. Answer the following questions :

- (a) The network of a certain project is shown in the figure below. Determine the expected time for each path. Which path is critical? (10)



- (b) The time estimates for three activities A, B and C are as follows.

Activities	Optimistic time	Most likely time	Pessimistic time
A	10	12	14
B	6	8	12
C	5	10	12

Determine the expected time and variance for each activity. Which activity has more reliable time estimates? (5)

6. Answer the following questions :

- (a) What is tender? (3)
- (b) What is pre-bid meeting? (3)
- (c) Draw the site layout for a building in city area showing the following and label it appropriately:

Site boundary, Entry and exit points, Path, Equipment shed, Temporary office, Store and Canteen.

The plot size is 40 m × 60 m. The road-side width is 40 m. (9)

7. Answer the following questions:

- (a) Briefly describe the need for inspection and quality control. (8)
- (b) Describe the safety measures to be adopted at the time of drilling and blasting operations. (7)

8. Answer the following questions :
- (a) Explain the purpose and important activities of different stages in construction. (8)
 - (b) Draw the type of organizational structure in state PWD department and discuss its merits and demerits. (7)
9. Answer the following questions :
- (a) Explain the important points to be checked during the inspection of reinforcement in R.C.C. construction. (6)
 - (b) What is prequalification process? (4)
 - (c) What is feasibility study? What is its importance? (2 + 3 = 5)
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