

Code : 011827

B.Tech 8th Semester Exam., 2015

CONSTRUCTION PLANNING AND  
MANAGEMENT

Time : 3 hours

Full Marks : 70

Instructions:

- (i) The marks are indicated in the right-hand margin.
- (ii) There are ~~nine~~ questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Fill in the blanks of any seven of the following : 2×7=14

- (a) In resource levelling, total duration of the project normally \_\_\_\_\_.
- (b) If the original cost of an equipment is ₹ 10,000 and its salvage value after 5 years is ₹ 1,000, its book value after 2 years is \_\_\_\_\_.
- (c) For a given activity, the optimistic, the pessimistic and the most probable times are 5, 17 and 8 days respectively, the expected time of the activity is \_\_\_\_\_.
- (d) The probability distribution representing the completion time in PERT analysis is \_\_\_\_\_.

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(e) Difference between total float and free float is \_\_\_\_\_.

(f) The probability that the load on a scaffolding will exceed 2T is 0.15 and the probability that the strength of scaffolding will be more than 2T is 0.8. The probability of failure of the scaffolding is \_\_\_\_\_.

(g) In time-cost analysis, cost slope is defined as \_\_\_\_\_.

(h) The optimum duration, total cost of the project is \_\_\_\_\_.

(i) \_\_\_\_\_ is a deterministic network technique.

(j) Sinking fund method is useful in estimating \_\_\_\_\_.

2. (a) What are the advantages and disadvantages of prefabrication? 7

(b) Explain in brief the design principle of prefabricated system. 7

3. (a) Related to construction injuries, define frequency rate, severity rate and incidence rate. 2+2+2=6

(b) Name some of the popular project management software. Discuss their utility. 8

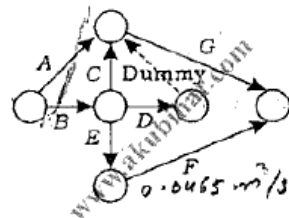
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- (a) Discuss network crashing. 6  
 (b) Discuss resource scheduling and resource smoothening. 4+4=8

7. Describe common defects in buildings and their remedial measures. 14

8. For the following network and data, determine the project duration which will result in minimum total project cost. Indirect cost is ₹ 400/day; 14



|   | Normal       |               | Crash        |               |
|---|--------------|---------------|--------------|---------------|
|   | Time (weeks) | Cost (₹ '000) | Time (weeks) | Cost (₹ '000) |
| A | 10           | 20            | 7            | 30            |
| B | 8            | 15            | 6            | 20            |
| C | 5            | 8             | 4            | 14            |
| D | 6            | 11            | 4            | 15            |
| E | 8            | 19            | 5            | 13            |
| F | 5            | 5             | 4            | 8             |
| G | 14           | 3             | 8            | 4             |

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4. (a) Define cash flow diagram, capitalized cost and salvage value. 2+2+2=6

(b) A construction company purchases certain materials for five years. The present cost of these materials is ₹ 50 lakh. The cost increases annually in geometrical pattern with rate of increase/decrease being (i) -5%, (ii) 0% and (iii) 5%. Calculate the present worth of material purchase for the five-year period for all the three cases. The rate of interest is 8% compounding annually. 8

5. A project consists of 11 activities as detailed below:

| Job/activity | Immediate predecessors | Activity duration |
|--------------|------------------------|-------------------|
| A            |                        | 5                 |
| C            | A                      | 7                 |
| D            | B                      | 5                 |
| E            | B                      | 5                 |
| F            | E                      | 3                 |
| H            | D                      | 10                |
| I            | E, F                   | 9                 |
| J            | G                      | 5                 |
| K            | I, J, H                | 0                 |

Draw an arrow diagram of the project. Also find EST, EFT, LST, LFT, project duration and total float.

$$2 + (2 \times 6) = 14$$

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(Turn Over)

