

80 Marks

3 Hours

Note: 1. Attempt any 4 Questions

2. All questions carry equal (20) marks

3. Figures to the right indicate marks

4. Attempt sub questions in order

5. Assume any data, if required, and state them clearly

1. (a) The cost-duration data for various activities of a small G+1 bungalow project in a rural region are given in the following table: [16]

Activity	Normal		Crash	
	Duration	Cost	Duration	Cost
1-2	4	4000	3	4500
1-4	5	5000	4	5200
2-3	9	3000	7	3500
2-4	8	2500	5	4000
3-6	5	3500	3	4000
3-5	7	5000	5	6000
4-5	0	0	0	0
4-7	6	6000	5	6200
5-6	2	8000	2	8000
5-7	4	4500	4	4500
6-8	8	7500	7	7750
7-8	9	9000	6	11400

The indirect costs are Rs 1500/- per day

- (i) Draw the network, find the normal project duration and the critical path. Also find the corresponding total project cost.
- (ii) Carry out stage by stage compression and find
- The optimal duration and the corresponding minimum cost.
  - All crash solution.
- (iii) Plot a graph of cost versus time.
- (b) List down the direct costs and indirect costs included on a construction project. [4]

2. a) What are the softwares available for construction project planning? Give the applications as well as merits and demerits of the same. [8]
- b) Write Short note Management Functions & Management Styles [6]
- c) Find the difference in production rate (8 hrs per day) for brickwork, when the standard time is 3 minute 50 seconds and policy allowance are 8% and 10% at site 1 and site 2 respectively. [6]
3. a) Explain in details - Project Life Cycle and its aspects related with construction [8]
- b) State the various necessary documentation for major works like Dams, multi-storeyed structures & tunnels. [8]
- c) Differentiate between Resource levelling & Resource smoothing. [4]

[TURNOVER

4. a) What are the activities involved in site mobilization and demobilization for a Road project? [6]  
 b) What is Productivity? How productivity can be improved by "Work Study". Explain with the help of suitable example related with construction. [7]
5. a) What is meant by "Management By Objectives"? How it can be used for performance appraisal of a Construction Manager? Explain with suitable example. [8]  
 b) The following data refers to time motion study of a dumper loader operation for earth moving activity: [12]

Obs No	Time reqd fo adjustment (sec.)	Time reqd to excavate and fill bucket(sec.)	Time reqd for swing(sec.)	Time reqd for lifting, positioning(sec.)	Time reqd to empty the bucket (sec.)
1	25.5	120	25	18	17
2	35	178	41	15.5	24
3	12.5	129	15.5	26.5	22.5
4	22	144.5	42	16	11
5	58	150	45.5	34.5	23

Based on statistical analysis (measures of dispersion), determine which sub-activity is most efficiently performed and which is least consistently performed. Comment on what may be the possible reasons for the poor performance of the sub-activity

6. Write short notes on the following: [20]
- String Diagrams
  - Time and motion study.
  - Matrix structure of organization.
  - Project life cycle.
  - Job evaluation with respect to a construction firm