Q.P. Code : 830700

(3 Hours)   [Total Marks : 80

N.B. : (1) Attempt **any four** 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) What do you mean by Project Management Consultant? Elaborate its role in construction of an mega-highway   6

  (b) Classify the various informal forms of organization.   4

  (c) Safety policies to be adopted on construction sites   4

  (d) How will you carry out site mobilization of a tunnel construction   6

2. (a) The cost-duration data for various activities of a small building project in an urban area are given in the following table :   14

Activity code	Normal		Crash	
	Duration (weeks)	Cost (Rs.)	Duration (weeks)	Cost (Rs.)
1-2	4	40,000	3	45,000
1-4	5	50,000	4	52,000
2-3	9	30,000	7	35,000
2-4	8	25,000	5	40,000
3-6	5	35,000	3	40,000
3-5	7	50,000	5	60,000
4-5	0	0	0	0
4-7	6	60,000	5	62,000
5-6	2	80,000	2	80,000
5-7	4	45,000	4	45,000
6-8	8	75,000	7	77,500
7-8	9	90,000	6	1,14,000

TURN OVER

The indirect costs are Rs 15,000/- per week

    (i)   Draw the network, find the normal project duration and the critical path . Also find the correspondibg 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

                                                    6

    (b)   Explain Line of Balance techniques with an example.

3.   (a)   Discuss the importance of communication and coordination between client, consultant and contractor for a construction site. Explain with suitable examples.   7

    (b)   Discuss Web-based Project Management   5

    (c)   The following data refers to time motion study of a dumper loader operation for earth moving activity: 8

Obs No	Time reqd for adjustment (sec.)	Time reqd to excavate and fill bucket (sec.)	Time reqd for swing (sec.)	Time reqd for lifting, positioning (sec.)	Time reqd to fill the dumper (sec.)
1	25	81	21	16	222
2	15.5	36	20.5	24.5	116.5
3	22.5	41	18.5	28.5	135
4	22	32.5	16	36	104.5
5	18	30	15.5	34.5	192

Based on statistical analysis (measures of dispersion), determine which subactivity subactivity 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.

TURN OVER

4. (a) Explain in details- Project Life Cycle and its aspects related with construction   5

   (b) Highlight the significant contributions by Abraham Maslow, Henry Fayol and Federick Taylor to the theories of management   8

   (c) For the network given below, draw PERT diagram. Find expected duration and variance of each activity. Determine the expected duration of the project. Also determine the probability for the project to be completed in 42 days.   7

Activity	t_o	t_m	t_p
1-2	4	6	15
1-6	4	7	14
2-3	8	12	30
2-4	2	5	8
3-5	6	11	17
4-5	4	6	15
6-7	6	9	27
5-8	2	4	10
7-8	5	19	28

Consider the following table for z-factor and % probability

z	% probability
0	50
1	84.1
2	97.7
3	99.9
-1	15.9
-2	2.3
-3	0.1

TURN OVER

5. (a) What is training? What are the objectives of the training? How training for construction supervisor and executives is carried out in big projects?   8

   (b) Explain the importance of incentives in enhancing workers performance in construction industry. Explain with examples   5

   (c) Write short note on merit rating and job evaluation   7

6. Write short notes on (**Any Five**):   20

   (a) Project clearance procedures for multi-storeyed buildings

   (b) DPR for an infrastructure project in Navi Mumbai

   (c) String Diagrams

   (d) Application of PRIMAVERA & MSP in construction management

   (e) Personal protective equipments

   (f) Resource smoothening