

BE-CIVIL / Sem-VIII / R19 / SA-2025 / 23-08-2025

Time: 3 Hours

Marks: 80

- Note : (1) Question No.1 is compulsory
 (2) Attempt any three questions from the remaining
 (3) Figures to the right indicate full marks
 (4) Assume suitable data if necessary and clearly state the same

Q.P Code: 91482

Q1 Question No.1 is compulsory

- (a) Following table shows the activities, their duration and interdependence. Draw the network, determine the critical path, project duration and all floats. 10

Activity	P	Q	R	S	T	U	V	W
Preceding activity	-	P	P	Q	Q	R,T	S,U	R,T
Duration (weeks)	4	6	8	3	5	6	4	3

- (b) Explain the functions of construction management. Discuss its significance in construction projects. 10

- Q2 (a) The details of a construction project are given below. Find out the expected duration, standard deviations and variances. What is the probability that the project will be completed in (i) 26 days (ii) 31 days 10

Activity	1-2	2-3	2-4	3-5	4-6	5-7	6-8	7-9	8-10	9-10	10-11
t_o	2	1	2	1	1	3	7	4	4	5	1
t_m	4	1	4	2	2	5	10	6	7	7	1
t_p	7	2	5	3	3	6	13	10	9	10	2

Z	-3.0	-2.0	-1.0	0	1.0	2.0	3.0
P%	0.13	2.28	15.87	50	84.13	97.72	99.87

- (b) What are the different scheduling techniques? Explain with their uses and limitations. 10

- Q3 (a) Prepare a resource histogram based on Earliest Start Time (EST) and Latest Start Time (LST) schedules. Comment on which schedule you prefer and why. 10

Activity	Preceding activity	Duration	Labour required
A	-	7	3
B	A	5	4
C	B	4	5
D	C	5	3
E	C,D	3	2

- (b) (i) What is inventory control in construction sites? 10
 (ii) Explain ABC analysis.

- Q4 (a) From the-given data, determine: 10
 (i) The optimum project duration and the corresponding minimum cost of the project.
 (ii) Draw the Time-Cost optimization graph.
 Consider the indirect cost of the project as Rs. 5000 per week.

Activity	Normal duration	Crash duration	Normal cost	Crash cost
1-2	9	6	12000	15000
1-3	8	5	25000	32000
1-4	15	10	28000	36000
2-4	5	3	9000	14000
3-4	10	6	15000	24000
4-5	2	1	22000	29000

- (b) When is network updating required? Explain the steps for network updating. 10

- Q5 (a) What is resource allocation? Differentiate between resource smoothing and resource levelling. 10

- (b) Discuss the significance of construction safety. What measures can be taken to ensure safety at construction sites? 10

- Q6 Write short notes on any four of the following: 20

- (a) Project management software
 (b) Differences between CPM and PERT
 (c) Minimum Wages act
 (d) Project Life Cycle
 (e) Human Resources Management
