Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2023
Subject Code:3164014 **Date:11-12-2023**
Subject Name:Construction Project Planning and Management
Time:02:30 PM TO 05:00 PM **Total Marks:70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	What are the functions of construction management?	**03**
	(b)	Differentiate CPM and PERT methods.	**04**
	(c)	Write a note on Resource Smoothening with suitable example.	**07**
Q.2	**(a)**	Define the scope of construction management.	**03**
	(b)	Explain the step-by-step planning of a construction project.	**04**
	(c)	What are the floats in the CPM method. Explain all the floats with suitable example.	**07**

OR

(c) Crash the project with the activities shown in the table below by 2 days with minimum costing. The indirect cost for the project is 800 Rs per Day. **07**

Activity	Normal		Crash	
	Time (days)	Cost (Rs)	Time (days)	Cost (Rs)
1-2	8	25000	6	30000
1-3	4	15000	2	18000
2-4	2	5000	1	6000
2-5	10	10000	5	16000
3-4	5	10000	1	18000
4-5	3	9000	1	4000

			MARKS
Q.3	**(a)**	What is BETA distribution. Where is it used?	**03**
	(b)	Explain time cost optimization of networks.	**04**
	(c)	For the activities of a project shown in the table, what is the probability of the project to be completed in 25 days?	**07**

Activity	Predecessor Activity	Time		
		Optimistic	Most likely	Pessimistic
A	--	2	5	14
B	--	1	10	12
C	A	0	0	6
D	A	1	4	7
E	C	3	10	15
F	D	3	5	7
G	B	1	2	3
H	E, F	5	10	15
I	G	3	6	9

Q.3 **(a)** Explain the significance of Network updating. 03
(b) Explain resource allocation with suitable example. 04
(c) A canal construction project has a list of tasks to be completed with the below tabulated time estimates. 07

Activity	Activity Name	T_0 (days)	Tm (days)	Tp (days)
1-2	A	4	6	8
1-3	B	2	3	10
1-4	C	6	8	16
2-4	D	1	2	3
3-4	E	6	7	8
3-5	F	6	7	14
4-6	G	3	5	7
4-7	H	4	11	12
5-7	I	2	4	6
6-7	J	2	9	10

    A. Draw the project Network.
    B. Find the Critical path.
    C. Find the probability of the project to be completed in 19 days.

Q.4 **(a)** What is scheduling? 03
(b) Write a short note on the application of Line Of Balance method. 04
(c) Generate Work Breakdown Structure for the construction of a portion of 15 km long National Highway. Show all the activities up to level 1 and any one activity up to level 4. 07

OR

Q.4 **(a)** Explain the use of a bar chart in a infrastructure project. 03
(b) What are the stakeholders in a bridge construction project? 04
(c) Generate Work Breakdown Structure for the construction of an International School up to level 2 in all the activities. 07

Q.5 **(a)** Differentiate AOA and AON. 03
(b) Define the terms: (A) Crashing of an activity (B) Indirect Cost (C) Cash inflow (D) Resource smoothening. 04

(c) Draw AOA diagram for the activities shown in the table given below. Determine critical path and duration of the project. 07

Activity	Predecessor Activity	Duration in weeks
A	--	6
B	--	2
C	--	9
D	A, B	4
E	B	7
F	D	5
G	D, E	10
H	C, F, G	8
I	C, G	3
J	H, I	2

Q.5 **(a)** Define Controlling in project management? **03**

(b) Enlist minimum 8 activities with suitable duration and sequence in the construction of a steel bridge over a running railway line. **04**

(c) Draw AON network diagram for the activities shown in the table given below. Determine critical path and duration of the project. **07**

Activity	Predecessor Activity	Duration in weeks
A	--	6
B	--	2
C	--	9
D	A, B	4
E	B	7
F	D	5
G	D, E	10
H	C, F, G	8
I	C, G	3
J	H, I	2

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