Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code:3164014 Date:22-05-2024

Subject Name:Construction Project Planning and Management

Time:10:30 AM TO 01:00 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)** List differences between PERT and CPM. **03**

(b) Describe the relevance of construction management in project success. **04**

(c) Write the importance of following in a construction projects (in detail). **07**

a. Planning
b. Scheduling
c. Control

Q.2 **(a)** Define activity and its types. **03**

(b) Write the limitations of Gantt and Milestone charts. **04**

(c) Enumerate various types of floats used in a CPM network along with method to calculate them. **07**

OR

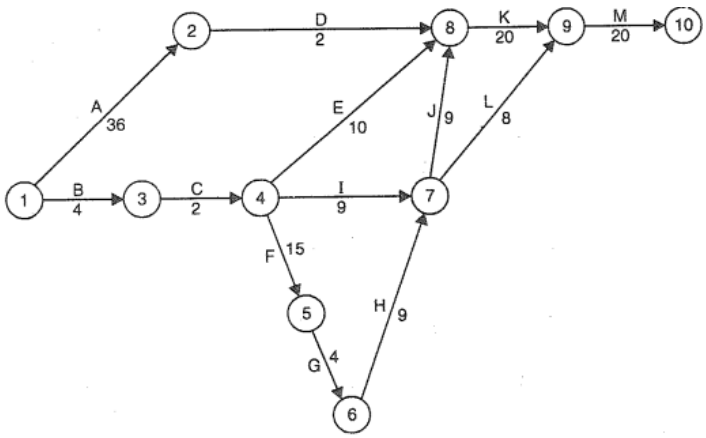
(c) Crash the project with the activities in the table by 2 days with minimum costing. The indirect cost for the project is 900 Rs per day. **07**

Activity	Normal Time		Crash Time	
	Time (days)	Cost (Rs)	Time (days)	Cost (Rs)
1-2	8	30000	6	35000
1-3	4	20000	2	22000
2-4	2	5500	1	6000
2-5	10	11000	5	12000
3-4	5	11000	1	12500
4-5	3	10000	1	11000

Q.3 **(a)** Define BETA distribution and its significance. **03**

(b) Explain the term time cost optimization in CPM network. **04**

(c) For the network diagram shown below, calculate EST, EFT, LST, and LFT and total float. The activity times are also shown in figure. **07**



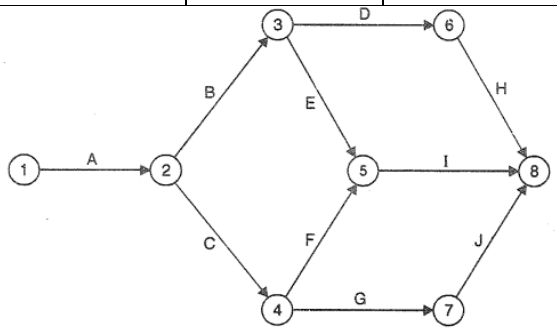
OR

Q.3 **(a)** Enumerate different types of project costs. **03**

(b) Draw the flowchart to update a CPM network. **04**

(c) A building project consists of 10 activities, shown by a network diagram below. The normal duration required to perform the above activity are given in table below. Compute the event time, activity times and critical path. **07**

Activity	Estimated duration	Activity	Estimated duration
A	5	F	2
B	2	G	3
C	6	H	8
D	4	I	7
E	4	J	2



Q.4 **(a)** Explain critical path for a network diagram. **03**

(b) Describe AOA and AON network. **04**

(c) Draw a PERT and CPM based network diagram for a purchase of new universal testing machine (UTM) for concrete lab. **07**

OR

Q.4 **(a)** Explain most likely time, optimistic time, and pessimistic time with respect to a PERT diagram. **03**

(b) Define resource smoothening and resource levelling. **04**

(c) The activity breakdown for a certain project is as under **07**

Activity No	Duration (weeks)
1	1
2	2
3	4
4	3
5	1

6	2
7	4

Activity 2 and activity 3 can be done concurrently, and both must follow activity 1. Activity 2 must precede activity 4. Activity 5 cannot begin until both activities 2 and 3 are completed. Activity 6 can be started only after activities 4 and 5 are complete. Activity 7 is the last activity which can be started only after completion of activity 5. Prepare the bar chart for the project.

Q.5 **(a)** Define project updating in networks. **03**

(b) Describe line of balance method. **04**

(c) Draw a WBS diagram schedule for construction of highway project up to level 1 for all activities and any one activity for level 4. **07**

OR

Q.5 **(a)** Describe dummy activity. **03**

(b) Write rules and regulations to be followed in drawing of a network diagram. **04**

(c) Draw a WBS diagram schedule for construction of commercial project up to level 1 for all activities and any one activity for level 4. **07**

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