

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3170614****Date:12-12-2023****Subject Name: Construction Engineering 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.

- Q.1**
- | | | |
|-----|--|---------------------------|
| (a) | Define construction management. Write scope of construction management. | Marks
03 |
| (b) | Explain various phases of project management. | 04 |
| (c) | From a given data of a project in tabular form draw the network, calculate total project duration, determine the critical path and also calculate total float, free float and interfering float. | 07 |

Activity	A	B	C	D	E	F	Dummy
Nodes	1-2	2-3	2-4	3-5	4-5	5-6	3-4
Durations (Days)	5	7	4	4	8	5	0

- Q.2**
- | | | |
|-----|---|-----------|
| (a) | Explain project cash flow diagram. | 03 |
| (b) | What are advantages and disadvantages of Line and staff organization? | 04 |
| (c) | Explain Gantt bar chart with suitable example. Also write limitation of the Gantt bar charts. | 07 |

OR

- (c) Explain various cost to be considered for owning and operating construction equipment. **07**
- Q.3**
- | | | |
|-----|---|-----------|
| (a) | Define work breakdown structure. Prepare a work breakdown structure of residential building. | 03 |
| (b) | Differentiate between CPM and PERT. | 04 |
| (c) | From a given data of a project in tabular form draw the network diagram, determine the T_E and T_L for all event and critical path and also Variance and standard deviation for entire project. | 07 |

Activity	t_o (days)	t_m (days)	t_p (days)
1-2	3	6	15
1-3	3	9	21
2-4	6	12	18
3-4	2	5	8
4-5	1	4	7
3-5	6	15	30

OR

- Q.3**
- | | | |
|-----|---|-----------|
| (a) | Explain principles of Job Layout. | 03 |
| (b) | Explain Economic order quantity (EOQ) Model. | 04 |
| (c) | Explain safety measures for demolition of building. | 07 |
- Q.4**
- | | | |
|-----|---|-----------|
| (a) | Write short note on Equipment Schedule. | 03 |
| (b) | Write step by step process of resource levelling. | 04 |
| (c) | Explain principles of lean construction management. | 07 |

OR

- | | | | |
|------------|------------|--|-----------|
| Q.4 | (a) | Draw a typical cost – duration curve and show on it optimum duration and minimum project cost. | 03 |
| | (b) | Enlist various BIM software. Give use of BIM in project management. | 04 |
| | (c) | What do you understand by updating? Discuss the method of updating. | 07 |
| Q.5 | (a) | What are various indicators of a good quality structure? | 03 |
| | (b) | What is quality control (QC)? Write factors affecting of QC. | 04 |
| | (c) | Draw a neat sketch of belt conveyor system and explain function of various components. | 07 |
| OR | | | |
| Q.5 | (a) | Give classification of construction equipment. | 03 |
| | (b) | Explain various factors affecting selection of construction equipment. | 04 |
| | (c) | Define total quality management (TQM). Explain principles of TQM. | 07 |
