

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3170614****Date:10/12/2021****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 the term work breakdown structure. Prepare a work breakdown structure of a compound wall. **03**
- (b) Prepare a job layout for an engineering college construction. **04**
- (c) Differentiate between quality control and quality assurances also write a short note on building and other construction workers act, 1996. **07**

- Q.2** (a) A precast plant consumes 30 tons of cement per month. The rate of cement is Rs. 2600 per ton. The order cost is Rs. 125/-. Inventory rate is 4.5%, determine economic order quantity. **03**
- (b) Differentiate between standard equipments and special equipments. **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 independent float. **07**

Activity	A	B	C	D	E	F	G
Preceding Activity	-	A	A	B	B, C	D, E	E
Duration (Days)	3	2	3	5	6	5	4

OR

- (c) From the following information determine the cost of production for excavation and hauling in terms of rupees per cubic meter. **07**
- Excavating equipment used is Hoe with 1.33 m³ dipper which can handle 1.51 m³ having cycle time of 16 seconds & operating factor of 55 minute per hour with cost of Rs. 3500 per hour. Material is good common earth with swell of 20% and fill factor of 0.85. Hauling unit was trucks 8.5 m³ (b.m.) capacity with operating factor of 50 minute per hour & having round trip time 22 minutes with cost of Rs. 400 per hour.

- Q.3** (a) States limitations of a bar chart. **03**
- (b) What is dummy activity? Under which circumstances dummy activity should be provided in a network? **04**
- (c) Explain functions of construction management. **07**

OR

- Q.3** (a) Explain mean, deviation and variance. **03**
- (b) Explain logic of precedence network. **04**
- (c) Under which circumstances LOB is preferable? State advantages of LOB. **07**

- Q.4** (a) Write short note on benefit/cost ratio. **03**
- (b) Differentiate between CPM and PERT. **04**

- (c) Explain step by step process of resource smoothening and resource levelling. **07**

OR

- Q.4** (a) Define cost slope. How to determine cost slope for activities? **03**
 (b) Enlist various BIM software. Explain AI, Cyber Security and IoT as future trends in project management. **04**
 (c) Original schedule of a small project is given below. Draw a network; determine total project duration and critical path. **07**

Activity	1-2	1-3	2-3	2-4	3-4	3-5	4-5	4-6	5-6
Duration (Days)	5	7	8	5	3	4	2	3	5

The above project was updated at the end of 10th day and following information was observed.

1. Activity 1-2 and 2-4 were completed as per schedule.
2. Activity 1-3 is completed in 5 days instead of planned 7 days.
3. Activity 2-3 started immediately after activity 1-2 was over. And it yet requires 5 more days.
4. Considering site condition duration of activity 3-4 and 3-5 are revised to 4 days and 5 days respectively.
5. Other activities are not having any change.

From the above information update the network. Also find total project duration and critical path of updated network.

- Q.5** (a) What are various indicators of a good quality structure? **03**
 (b) Write a brief note on statistical quality control. **04**
 (c) Explain safety measures for excavation. **07**

OR

- Q.5** (a) Draw a line diagram of dragline excavator and states name of its parts. **03**
 (b) Prepare a comparative study between wheel mount and crawler mount tractor. **04**
 (c) Draw a neat sketch of belt conveyor system and explain functions of various components. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3170614****Date:01/06/2022****Subject Name:Construction Engineering 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) How Engineer can achieve economy in a construction project?	03
	(b) Explain in detail role of construction project manager on construction	04
	(c) Explain the different phases of project specifying the activities to be carried out in each of phases.	07
Q.2	(a) Distinguish between CPM and PERT.	03
	(b) Differentiate between serial and Parallel activities.	04
	(c) What is work breakdown structure in construction project? Draw work breakdown structure of a residential building project.	07
	OR	
	(c) Explain Fulkerson's rules for numbering the events of a network.	07
Q.3	(a) Write a short note on a FSN analysis.	03
	(b) Discuss evaluation of a public projects.	04
	(c) What is job layout? Draw job layout for a Commercial complex building and for a Dam site.	07
	OR	
Q.3	(a) Explain developing site organization.	03
	(b) Enlist duties of Executive Engineer and Assistant Engineer.	04
	(c) What are the advantages and disadvantages of (I) Centralized and local purchasing and (II) Early and late procurement?	07
Q.4	(a) What are the advantages of scheduling?	03
	(b) Discuss about Labour schedule and Financial schedule.	04
	(c) What are the objectives of resources allocation? Explain, what do you mean by resources leveling? Explain step by step process of resource leveling.	07
	OR	
Q.4	(a) Explain project control process.	03
	(b) Draw a specimen material schedule for a project and explain it.	04
	(c) Explain why time cost trade off is necessary? Discuss various ways to reduce the activity duration.	07
Q.5	(a) Enlist various safety equipments.	03
	(b) Give safety measures for scaffolding and excavation.	04
	(c) Enlist the all causes of accident happen at site. Discuss job of safety officer at site in brief.	07

OR

- Q.5** (a) List the factor affecting cycle time of truck. **03**
(b) Give comparison between conventional construction method and mechanized method. **04**
(c) Enlist the various hoisting equipment. Draw neat sketches & explain working of any three equipments. **07**
