

Enrollment No./Seat No.:

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025**

**Subject Code: 3174027**

**Date: 13-11-2025**

**Subject Name: Construction Safety and Materials 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.**

	<b>Marks</b>
<b>Q.1 (a)</b> Define: (1) Near Miss (2) Hazard (3) Risk.	<b>03</b>
<b>(b)</b> Illustrate the common accidents at construction site with a suitable example.	<b>04</b>
<b>(c)</b> Outline the various unsafe conditions and unsafe acts commonly found at construction sites. Draw a neat sketch of the chain of events leading to an accident caused by unsafe conditions and acts.	<b>07</b>
<b>Q.2 (a)</b> Illustrate the importance of safety meeting in a construction project.	<b>03</b>
<b>(b)</b> Distinguish between Safety Officer and Safety Representative.	<b>04</b>
<b>(c)</b> Illustrate the role of the First-Line Supervisor in ensuring safety at a construction site.	<b>07</b>
<b>OR</b>	
<b>(c)</b> Illustrate the role of the Middle Manager in ensuring safety at a construction project.	<b>07</b>
<b>Q.3 (a)</b> Enlist the types of Safety Incentives.	<b>03</b>
<b>(b)</b> Describe the roles and responsibilities of OSHA and NIOSH in ensuring safe working conditions.	<b>04</b>
<b>(c)</b> What are the possible expectations of a precast structural component manufacturing vendor from a large construction company?	<b>07</b>
<b>OR</b>	
<b>(a)</b> Describe the benefits of Job-Site Safety Assessment.	<b>03</b>
<b>(b)</b> Explain the importance of engineering controls in OSHA's three lines of defense concept.	<b>04</b>
<b>(c)</b> Enlist the different stakeholders involved in the Law of Agency and describe their roles.	<b>07</b>
<b>Q.4 (a)</b> Illustrate the three key elements of lead time that is applied in material management concept.	<b>03</b>
<b>(b)</b> Explain briefly the FSN analysis applied in inventory management concept.	<b>04</b>

- (c) Explain the concept of Economic Order Quantity (EOQ) and Reordering Point as applied in the inventory management. Support your explanation with a diagram. 07

**OR**

- (a) Illustrate three costs that is associated and applied in the concept of material management. 03
- (b) Explain the process of single tendering. Provide a suitable example illustrating a situation where the single tender procurement method would be used. 04
- (c) Explain Just-In-Time (JIT) technique of inventory management. Give one example of industry (or product) where it can be applied. 07

- Q.5** (a) Illustrate the process of limited tender for procurement. Provide one situation where limited tender can be applied. 03
- (b) Explain VED analysis in Inventory Management. Describe, with an example, the type of industry where it is most likely applied. 04
- (c) A shop deals with construction goods and have seven different items in its inventory. The average number of units of each of these items held in the store along with their unit cost in given in Table 1. The shopkeeper has decided to employ ABC inventory system. Classify the items in A, B, and C categories. 07

Table 1

Item	Average Number of Units	Average Cost per Unit (Rs.)
1	10000	121.50
2	10000	100.00
3	24000	14.50
4	16000	19.75
5	60000	3.10
6	50000	2.45
7	30000	0.50

**OR**

- (a) Discuss the importance of inventory management that is applied in material management concept. 03
- (b) Describe four indicators of low effectiveness that is applied in material management concept within an organization. 04
- (c) A construction company purchases 10000 bags of cements annually. Each bag of cement costs Rs. 350 and the cost of purchase in procuring each lot is Rs. 150. The cost of carrying is 25%. Calculate the most economical order quantity. What is the average inventory level. 07

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