

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-7 SEMESTER – OLD PAPER – S22 TO S25 – QUESTION BANK

Subject Name & Code:

Construction Engineering and Management- 3170614

Unit 1: Introduction to Construction Management

Repeated Questions:

1. **Differentiate between CPM and PERT.**
 - Appeared in: S22 (Q2a, 03 marks), S23 (Q3a, 03 marks), W22 (Q1b, 04 marks), W23 (Q3b, 04 marks), S25 (Q2b, 04 marks)
2. **Explain the various phases of a construction project / project management.**
 - Appeared in: S24 (Q1a, 03 marks), W23 (Q1b, 04 marks), W24 (Q1b, 04 marks), S22 (Q1c, 07 marks)
3. **Define project. Enlist phases of a construction project. Enlist functions of construction management.**
 - Appeared in: S24 (Q1a, 03 marks), W23 (Q1a, 03 marks)

Other Important Questions:

1. **Discuss the reason behind the importance of construction management.** (S23 - Q1a, 03 marks), (W24 - Q1a, 03 marks)
2. **How can an Engineer achieve economy in a construction project?** (S22 - Q1a, 03 marks)
3. **Explain stages of project planning.** (W22 - Q1a, 03 marks)
4. **Differentiate between planning vs. scheduling of a project.** (S25 - Q1a, 03 marks)
5. **Classify the phases of a construction project.** (S25 - Q1b, 04 marks)
6. **Explain in detail the role of a construction project manager on a construction site.** (S22 - Q1b, 04 marks)
7. **Justify in detail the role of General Foreman at a construction site.** (S23 - Q1b, 04 marks)
8. **Explain Pre-project phase and post-project phase in detail.** (S23 - Q1c, 07 marks)
9. **Explain the various responsibilities of an owner in a construction project.** (S24 - Q1c, 07 marks)
10. **Explain various responsibilities of an engineer in a construction project.** (W22 - Q1c, 07 marks)
11. **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.** (W23 - Q1c, 07 marks) [*Numerical Problem*]

Unit 2: Project Planning, Scheduling & Networks

Repeated Questions:

1. **What is Work Breakdown Structure (WBS)? Prepare a WBS for a residential building/highway/etc.**
 - Appeared in: S22 (Q2c, 07 marks), S24 (Q3a, 03 marks), W23 (Q3a, 03 marks), S25 (Q1c, 07 marks), W24 (Q1c, 07 marks)
2. **Differentiate between Bar Chart and Milestone Chart.**
 - Appeared in: S24 (Q3b, 04 marks), W22 (Q3b, 04 marks)
3. **Explain the various rules for drawing a network. / Discuss various network rules.**
 - Appeared in: S24 (Q2c, 07 marks), W22 (Q3c, 07 marks)
4. **Explain Fulkerson's rules for numbering the events of a network.**
 - Appeared in: S23 (Q2c(OR), 07 marks), S22 (Q2c(OR), 07 marks)
5. **What is float? Explain different types of floats.**
 - Appeared in: W22 (Q2c, 07 marks), S25 (Q2a, 03 marks)

Other Important Questions:

1. **Differentiate between activity and event.** (S24 - Q1b, 04 marks)
2. **Differentiate between serial and parallel activities.** (S23 - Q2b, 04 marks), (S22 - Q2b, 04 marks)
3. **Define the following: 1) Activity 2) Dummy Activity 3) Event 4) Parallel activity** (W24 - Q2b, 04 marks)
4. **Briefly explain VED analysis.** (S23 - Q2a, 03 marks)
5. **Write a short note on FSN analysis.** (S22 - Q3a, 03 marks)
6. **Enlist the various limitations of bar charts and milestone charts.** (S24 - Q3b, 04 marks)
7. **Explain Gantt bar chart with a suitable example. Also write limitations of the Gantt bar charts.** (W23 - Q2c, 07 marks)
8. **Discuss Bar chart technique with construction of compound wall example.** (W24 - Q2c, 07 marks)
9. **Critique "Bar chart is not used for big and complex project".** (S25 - Q2c, 07 marks)
10. **Discuss Line of Balance, Mile stone chart and Compare with each other.** (W24 - Q2c(OR), 07 marks)
11. **Explain types of activities and types of events.** (S24 - Q3c, 07 marks)
12. **Explain the ladder network with a suitable example.** (S24 - Q3c(OR), 07 marks)
13. **What different time estimates are used in PERT?** (W22 - Q3a(OR), 03 marks)
14. **From a given data of a project in tabular form draw the network diagram, determine the T_E and T_L for all events and critical path and also Variance and standard deviation for entire project.** (W23 - Q3c, 07 marks) *[Numerical Problem]*
15. **State the advantages of the line of balance technique.** (W22 - Q3b(OR), 04 marks)
16. **What is the procedure for preparing a schedule with the help of the line of balance technique?** (S24 - Q3b(OR), 04 marks)
17. **Explain the logic of the precedence network. State advantages of precedence network.** (W22 - Q3c(OR), 07 marks)
18. **Draw a Network of following activity and find out critical path.** (S25 - Q3b, 04 marks) *[Numerical Problem]*
19. **Calculate the project duration from the following activity.** (S25 - Q3c(OR), 04 marks) *[Numerical Problem]*
20. **From the following network find out activity duration, project duration, critical path, Critical activity.** (W24 - Q4c, 07 marks) *[Numerical Problem]*
21. **Draw the network from following three time estimate, find out total project duration.** (W24 - Q4c(OR), 07 marks) *[Numerical Problem]*

Unit 3: Material, Equipment and Resource Management

Repeated Questions:

1. **Define Material Management. Explain its objectives.**
 - Appeared in: S23 (Q3b(OR), 04 marks), W22 (Q2a, 03 marks)
2. **Enlist merits and demerits of centralized and local purchasing.**
 - Appeared in: S23 (Q4c, 07 marks), S22 (Q3c, 07 marks)
3. **Explain Economic Order Quantity (EOQ) Model.**
 - Appeared in: S24 (Q4b, 04 marks), W23 (Q3b, 04 marks)
4. **Explain the process of resource smoothening and resource leveling.**
 - Appeared in: S24 (Q4c, 07 marks), W22 (Q4c, 07 marks)
5. **Differentiate between resource leveling vs. resource smoothening.**
 - Appeared in: W24 (Q3b(OR), 04 marks), S25 (Q3a, 03 marks)

Other Important Questions:

1. **Enlist the various functions of material management and explain any two in detail.** (S24 - Q2a, 03 marks)
2. **Justify “inventory is a heart of material management.”** (W24 - Q3b, 04 marks)
3. **Explain the procedure used for material management.** (S25 - Q3a(OR), 03 marks)
4. **Discuss the importance of construction equipment in the construction industry.** (S24 - Q2b, 04 marks)
5. **Which are the various alternatives for the purchase of equipment? Discuss direct purchase and hiring.** (S24 - Q2c(OR), 07 marks)
6. **Explain various cost to be considered for owning and operating construction equipment.** (W23 - Q2c(OR), 07 marks)
7. **Differentiate between standard equipment and special equipment.** (W22 - Q2b, 04 marks), (S25 - Q5b(OR), 04 marks)
8. **Give comparison between conventional construction method and mechanized method.** (S23 - Q5b(OR), 04 marks), (S22 - Q5b, 04 marks)
9. **Explain the method used for resource allocation.** (S25 - Q3a, 03 marks)
10. **What are the objectives of resources allocation?** (S22 - Q4c, 07 marks)
11. **Write step by step process of resource levelling.** (W23 - Q4b, 04 marks)
12. **Discuss the sources of fund availability in a construction project.** (W24 - Q2a, 03 marks)
13. **Describe various sources of funds for a project.** (W22 - Q4b, 04 marks)
14. **Explain project cash flow diagram.** (W23 - Q2a, 03 marks)

Unit 4: Project Monitoring, Control & Modern Systems

Repeated Questions:

1. **What is Job Layout? Draw a job layout for a commercial complex/bridge/housing project.**
 - Appeared in: S23 (Q3c, 07 marks), S22 (Q3c, 07 marks), S24 (Q4a, 03 marks), W24 (Q3c, 07 marks), S25 (Q3c(OR), 07 marks)
2. **Explain the project control process.**
 - Appeared in: S23 (Q4a(OR), 03 marks), S22 (Q4a(OR), 03 marks)
3. **Explain why time-cost trade-off is necessary? Discuss various ways to reduce the activity duration.**
 - Appeared in: S24 (Q4c(OR), 07 marks), S22 (Q4c(OR), 07 marks)
4. **What do you understand by updating? Discuss the method of updating.**
 - Appeared in: W23 (Q4c(OR), 07 marks), W24 (Q3c(OR), 07 marks)
5. **Explain the use of Building Information Modeling (BIM) in construction management. / Give use of BIM in project management.**
 - Appeared in: S24 (Q4b(OR), 04 marks), W24 (Q4b, 04 marks), W23 (Q4b, 04 marks)

Other Important Questions:

1. **Explain principles of Job Layout.** (W23 - Q3a(OR), 03 marks)
2. **State advantages of a good job layout.** (W22 - Q4a, 03 marks)
3. **Explain developing site organization.** (S23 - Q3a(OR), 03 marks)
4. **What data is required for updating the network of a project?** (W22 - Q4a(OR), 03 marks)
5. **Explain methods of updating the network of a project.** (S24 - Q4a(OR), 03 marks)
6. **Define: Crashing, Indirect cost, Normal time, S curve, Normal cost, Optimization, and Cost slope.** (S25 - Q2c(OR), 07 marks)
7. **Define: Direct cost, Indirect cost, Normal time, Crash time, Normal cost, Crash cost, and Cost slope.** (W22 - Q4c(OR), 07 marks)
8. **Explain the importance of crashing.** (W24 - Q4a, 03 marks)
9. **How to judge the activity for crashing? Explain the procedure of crashing.** (S25 - Q4a, 07 marks)
10. **Draw a typical cost – duration curve and show on it optimum duration and minimum project cost.** (W23 - Q4a(OR), 03 marks)
11. **Enlist various BIM software.** (W23 - Q4b, 04 marks), (S25 - Q4b, 04 marks)
12. **Describe the lean construction concept of project management.** (W24 - Q4b, 04 marks)
13. **Explain principles of lean construction management.** (W23 - Q4c, 07 marks)
14. **Enlist the advantages of lean construction as a project management.** (S25 - Q4c(OR), 07 marks)
15. **Discuss the various types of precedence relationships with example.** (W24 - Q4a(OR), 03 marks)
16. **Discuss evaluation of a public projects.** (S23 - Q3b, 04 marks), (S22 - Q3b, 04 marks)
17. **What are the advantages of scheduling? / Discuss positive points of scheduling.** (S22 - Q4a, 03 marks), (S23 - Q4a, 03 marks)
18. **Discuss about Labour schedule and Financial schedule.** (S22 - Q4b, 04 marks)
19. **Draw a specimen material schedule for a project and explain it.** (S22 - Q4b(OR), 04 marks)
20. **Write a short note on Equipment Schedule.** (W23 - Q4a, 03 marks)

Unit 5: Quality, Safety, and Construction Equipment

Repeated Questions:

1. **Differentiate between Quality Control (QC) and Quality Assurance (QA).**
 - Appeared in: S23 (Q4b(OR), 04 marks), W22 (Q5a, 03 marks)
2. **Enlist the causes of accidents on site and discuss preventive measures.**
 - Appeared in: S23 (Q5c, 07 marks), S22 (Q5c, 07 marks), W24 (Q5c, 07 marks)
3. **Explain Total Quality Management (TQM). Explain its principles/aims/elements.**
 - Appeared in: W23 (Q5c(OR), 07 marks), S24 (Q5b, 04 marks), W22 (Q5b, 04 marks)
4. **Enlist the various hoisting equipment. Explain any/Tower crane/Winch with a neat sketch.**
 - Appeared in: S23 (Q5c(OR), 07 marks), S22 (Q5c(OR), 07 marks)
5. **Draw a neat sketch of a belt conveyor system and explain the function of various components.**
 - Appeared in: S24 (Q5c(OR), 07 marks), W23 (Q5c, 07 marks)

Other Important Questions:

Quality Management:

1. **What is meant by inspection? Prepare a checklist for column formwork inspection before casting.** (S23 - Q4c(OR), 07 marks)
2. **Identify the role of inspection in Quality control.** (W24 - Q5a, 03 marks)
3. **What are the advantages of statistical quality control?** (S24 - Q5a, 03 marks)
4. **What are various indicators of a good quality structure?** (W23 - Q5a, 03 marks)
5. **What is quality control (QC)? Write factors affecting QC.** (W23 - Q5b, 04 marks)
6. **Describe the Construction Quality Assessment System (CONQUAS).** (W24 - Q5b, 04 marks)
7. **Differentiate CONQUAS Vs. Quality assessment system used in construction site in India.** (S25 - Q4c, 07 marks)

Safety Management:

1. **What is meant by a tool box meeting? Enlist various PPE required at a construction site.** (S23 - Q5a, 03 marks)
2. **Enlist various safety equipment.** (S22 - Q5a, 03 marks)
3. **Discuss the job of a safety officer at site. Explain the importance of an assembly point at site.** (S23 - Q5b, 04 marks)
4. **Give safety measures for scaffolding and excavation.** (S22 - Q5b, 04 marks)
5. **Explain safety measures for demolition of a building.** (W23 - Q3c(OR), 07 marks)
6. **Write a short note on the cost of accidents.** (S24 - Q5c, 07 marks)
7. **Write a short note on Occupational Safety and Health Administration (OSHA).** (W22 - Q5c, 07 marks), (S25 - Q4c(OR), 07 marks)
8. **Discuss the importance of ISO 45001 on a construction site.** (W24 - Q5b(OR), 04 marks), (S25 - Q4a(OR), 03 marks)
9. **Define the term 1) Fatal accident 2) Quality control 3) Quality Assurance.** (S25 - Q4a, 03 marks)

Construction Equipment:

1. **Explain terms: Loading time, Return time, and Dumping time.** (S23 - Q5a(OR), 03 marks)
2. **List the factors affecting the cycle time of a truck.** (S22 - Q5a(OR), 03 marks), (W22 - Q5b(OR), 04 marks)
3. **Give classification of construction equipment.** (W23 - Q5a(OR), 03 marks)

4. **Explain various factors affecting the selection of construction equipment.** (W23 - Q5b(OR), 04 marks), (W22 - Q2c(OR), 07 marks)
5. **Discuss the factors affecting owning and operating cost.** (W24 - Q5a(OR), 03 marks)
6. **Draw a line diagram of a dragline excavator and state the names of its parts.** (S24 - Q5a(OR), 03 marks), (S25 - Q5a(OR), 03 marks)
7. **Draw a line diagram of a power shovel excavator.** (W22 - Q5a(OR), 03 marks)
8. **Differentiate between wheel-mount tractors and crawler-mount tractors.** (S24 - Q5b(OR), 04 marks)
9. **Write a short note on pile driving equipment.** (W22 - Q5c(OR), 07 marks)
10. **Differentiate pile boring vs. Pile driving equipment.** (S25 - Q5b(OR), 04 marks)
11. **Describe the Tunnel Boring Machine (TBM) with its use, function, advantages, etc.** (W24 - Q5c(OR), 07 marks)
12. **Compare TBM vs. other tunnel construction equipment.** (S25 - Q5a(OR), 03 marks)
13. **Enlist the different earthmoving equipment and Explain any one with a sketch.** (S25 - Q5c(OR), 07 marks)
14. **Explain the different dewatering equipment.** (S25 - Q5c(OR), 07 marks)
