

**VINAYAKA MISSIONS RESEARCH FOUNDATION**  
**(Deemed to be University)**  
**M.E -DEGREE EXAMINATIONS - FEB-2022**  
**CONSTRUCTION ENGINEERING AND MANAGEMENT**  
**Third /Fifth Semester**  
**ADVANCED CONSTRUCTION TECHNIQUES**  
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions  
**Part-A (10 x 2 =20 Marks)**

- 1 Define Caisson and give the types.
- 2 What is the purpose of cofferdam?
- 3 Explain the process of vacuum dewatering concrete.
- 4 What are the forces taken into account for the design of high rise structure?
- 5 Write short notes on box decks.
- 6 What is meant by braced domes?
- 7 Write short note on Slab Jacking techniques.
- 8 Write short note on underpinning?
- 9 How to group the construction accidents?
- 10 What are the conditions of flooring?

**PART-B (5 x 16 = 80 )**

- 11 a. Explain
  - a) Shoring methods for deep cutting
  - b) Laying operations for build up offshore system.
- OR**
- b. Explain the dewatering methods and the dewatering equipments used in the under ground open excavation.
- 12 a. Discuss about the embodied energy of materials and environmental impact of building.
- OR**
- b. Explain the aerial transporting, handling, erecting light weight components on tall structure.
- 13 a. Explain the construction features of the bow sting bridge.
- OR**
- b. Explain the construction sequence and methods in domes and prestressed domes.
- 14 a. Discuss the techniques used in pipeline lining and cleaning.
- OR**
- b. Explain the foundation settlement repairs by various techniques.
- 15 a. Explain the dismantling programme on wall and floors.
- OR**
- b. Explain the causes of accidents and its remedies to avoid accident.

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**M.E -DEGREE EXAMINATIONS - FEB-2022**  
**CONSTRUCTION ENGINEERING AND MANAGEMENT**  
**Third Semester**  
**CONSTRUCTION PLANNING,SCHEDULING AND CONTROL**  
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions  
**Part-A (10 x 2 =20 Marks)**

- 1 What are the types of Project plan?
- 2 What is meant by Line –of- Balance technique?
- 3 Briefly explain Scheduling within the resource constraints.
- 4 Write the steps involved in Scheduling of network Plan.
- 5 What are the classifications of Construction Cost?
- 6 What is meant by Home office Overheads?
- 7 What is meant by Quality Control?
- 8 Name the tests to be done for determining the Quality of soil.
- 9 What are the guidelines for designing the project organization?
- 10 What is the role of a project manager?

**PART-B (5 x 16 = 80 )**

- 11 a. Briefly explain about Planning Benefit and Scheduling Benefit.  
**OR**  
b. Explain in detail about the steps involved in Planning Implementation.
- 12 a. Write the steps involved in Monte Carlo Schedule.  
**OR**  
b. Describe as a example the Activities of Pumping Station Project.
- 13 a. Write notes on ‘S’ Curve Tool.  
**OR**  
b. Explain in detail about various causes of Unfavorable Direct Cost Variances.
- 14 a. Write in detail about safety precaution to be done in a building construction.  
**OR**  
b. Explain about the steps to be done to prevent accidents.
- 15 a. Explain in detail the role of project manager.  
**OR**  
b. Write about the benefits of computerized information system.

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**M.E -DEGREE EXAMINATIONS - FEB-2022**  
**CONSTRUCTION ENGINEERING AND MANAGEMENT**  
**Third Semester**  
**CONTRACT LAWS AND REGULATIONS**  
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions  
**Part-A (10 x 2 =20 Marks)**

- 1 Defines illegal contract.
- 2 Define torts.
- 3 Differentiate between tender and auction.
- 4 State the procedures for bidding.
- 5 State the objectives of arbitration and conciliation act 1996.
- 6 Who is not competent to refer a dispute to arbitration?
- 7 Define taxation.
- 8 What do you meant by encumbrance certificate?
- 9 What is the minimum eligible criterion of an employee for bonus?
- 10 Define dispute.

**PART-B (5 x 16 = 80 )**

- 11 a. Elaborate the provisions of contract documents.  
**OR**  
b. Elaborate the contents in contract documents.
- 12 a. Discuss the role of tender in commercial points of view.  
**OR**  
b. Discuss briefly about the consequences of invalid tender.
- 13 a. Discuss about the advantages and disadvantages arbitration.  
**OR**  
b. Briefly explain subject- matter of reference to arbitration.
- 14 a. Discus the provisions laid down in purchase and use of rural land.  
**OR**  
b. Explain inbrief about statutory regulations.
- 15 a. Explain in detail about the collective bargaining process.  
**OR**  
b. Discuss in detail about strikes and itstypes.

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**M.E -DEGREE EXAMINATIONS - FEB-2022**  
**CONSTRUCTION ENGINEERING AND MANAGEMENT**  
**Second Semester**  
**ELECTIVE - MAINTENANCE AND REHABILITATION OF**  
**STRUCTURES**

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions  
**Part-A (10 x 2 =20 Marks)**

- 1 What are the steps in repair aspect?
- 2 List out the various materials used for rehabilitation.
- 3 What are the important aspects that will be studied under thermal properties of concrete?
- 4 Write short notes on cathodic protection.
- 5 What are the methodologies used for selecting repair materials?
- 6 Difference between shoring & under pinning
- 7 Explain the process of Damp Proof Courses in construction joints.
- 8 Briefly explain polymer concreting.
- 9 What is the need of demolition work?
- 10 Define accident.

**PART-B (5 x 16 = 80 )**

- 11 a. Explain evaluate the need of repair  

**OR**

 b. Discuss in detail about the causes of deterioration of concrete structures
- 12 a. Discuss in detail about control of cracking in mass concrete and repair of cracks.  

**OR**

 b. Explain in detail about the influence of sulphate attack in concrete
- 13 a. Explain in detail about polymers in concrete and its applications.  

**OR**

 b. Discus in detail about control of cracking and repair of cracks due to shrinkage.
- 14 a. Discuss in detail about the special concrete of sulphur infiltrated concrete.  

**OR**

 b. Discuss in detail about concrete chemicals their properties and applications.
- 15 a. Explain the various types of recent advanced demolition techniques.  

**OR**

 b. Explain concrete demolition, runway demolition and underwater demolition.

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**M.E -DEGREE EXAMINATIONS - FEB-2022**  
**CONSTRUCTION ENGINEERING AND MANAGEMENT**  
**Third/Fifth Semester**  
**ELECTIVE - PROJECT SAFETY MANAGEMENT**  
(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions  
**Part-A (10 x 2 =20 Marks)**

- 1 What are direct costs of an accident?
- 2 What measures are to be followed for accident preventions?
- 3 Who can attend the safety meetings?
- 4 What are the aims of project manage to achieve the mission?
- 5 What do you mean by substance abuse?
- 6 List out the possible obligation in contractual relationships.
- 7 Define compensation.
- 8 Mention any two work of safety committee.
- 9 Define the term designer.
- 10 List out the functions of designer.

**PART-B (5 x 16 = 80 )**

- 11 a. Explain about human factors in construction safety.  
**OR**  
b. Discuss the provisions for health measures.
- 12 a. Discuss about the duties and responsibility of the organise.  
**OR**  
b. Explain the various steps in planning for construction projects.
- 13 a. Brief about the conditions laid down in the contract.  
**OR**  
b. Write short notes on
  - a) Earnest money deposit
  - b) Security deposit money
- 14 a. Elaborate the role played by the middle managers in safety.  
**OR**  
b. Discuss the provisions and measures of working compensation.
- 15 a. Brief about the safety provisions followed by the designers.  
**OR**  
b. Distinguish between the role of designer and CDM coordinator.

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**M.E -DEGREE EXAMINATIONS - FEB-2022**  
**CONSTRUCTION ENGINEERING AND MANAGEMENT**  
**Third/Fifth Semester**  
**ELECTIVE - RESOURCE MANAGEMENT AND CONTROL IN**  
**CONSTRUCTION**

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours

Maximum Marks:100 Marks

Answer **ALL** questions  
**Part-A (10 x 2 =20 Marks)**

- 1 List out the classifications of materials.
- 2 What do you mean by equipment classification?
- 3 What are the various classes of labour?
- 4 What are the courses of labour's law moral?
- 5 How classify construction materials?
- 6 What do you mean by equipment outlay?
- 7 How duration is assessed?
- 8 Differentiate between normal time and crash time.
- 9 Brief about the labeling approach.
- 10 List out the barriers in leveling and loading.

**PART-B (5 x 16 = 80 )**

- 11 a. Explain about Equipment selection and its types.  
**OR**  
b. Suggest the methods of manpower and its implementation.
- 12 a. Explain about Equipment selection and its types.  
**OR**  
b. Explain about materials provisioning process.
- 13 a. Suggest various measures to minimize the wastage.  
**OR**  
b. Write short note on:  
a) Material procurement  
b) Scheduling materials requirement  
c) Material
- 14 a. Define planning.Explain the process of planning in project.  
**OR**  
b. Elaborate the steps in computing critical paths.
- 15 a. Discuss the scope and importance of value management.  
**OR**

b. What are the various management techniques applying in resource management?

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**VINAYAKA MISSIONS RESEARCH FOUNDATION**  
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**M.E/M.TECH- DEGREE EXAMINATIONS – FEB-2022**

**MANUFACTURING ENGINEERING**

**First Semester**

**NUMERICAL METHODS AND GRAPH THEORY**

(Candidates admitted under 2017 Regulations-CBCS)

Time: Three hours

Maximum: 100Marks

Answer **ALL** questions

**PART – A (10 x 2 = 20 marks)**

1. For solving a linear system, compare Gaussian elimination method and Gauss-Jordan method
2. Explain Gauss-Seidel method to solve a system of simultaneous equations.
3. State Gauss forward interpolation formula
4. Write down the Simpson's  $\frac{1}{3}$  Rule
5. Write the Euler's formula
6. Using Euler's method Solve  $y' = x + y + xy$ ,  $y(0) = 1$ , compute  $y$  at  $x = 0.1$  by taking  $h = 0.05$
7. Explain briefly about Konigsberg Bridge problem
8. Define Isomorphic Graph with an example
9. State Prim's Algorithm
10. State Dijkstra's Algorithm

**PART – B (5 x 16 = 80 marks)**

11. a) Solve the system of equation by Gauss-Jordan method

$$x - y + z = 1, -3x + 2y - 3z = -6, 2x - 5y + 4z = 5$$

**OR**

- b) Solve the following system of equation by Gauss- Seidel method

$$4x + 2y + z = 14, x + 5y - z = 10, x + y + 8z = 20$$

12. a) Express 'y' as a polynomial in 'x' from the following data using Hermite's interpolating polynomial

$x$	0	1	2
$y$	1	3	21
$f'(x)$	0	3	36

**OR**

- b) Fit the following four point by cubic splines

$i$	0	1	2	3
$x_i$	1	2	3	4
$y_i$	1	5	11	8

Use the end conditions  $y_0'' = y_3'' = 0$ . Hence compute (i)  $y(1.5)$  and (ii)  $y'(2)$

13. a) Given that  $\frac{dy}{dx} = x^2 y - 1$  and  $y(0) = 1$ , Find the value of  $y(0.1)$

using Taylor series method

**OR**

- b) Find the values of  $y(0.2)$  and  $y(0.4)$  using the Runge-Kutta method

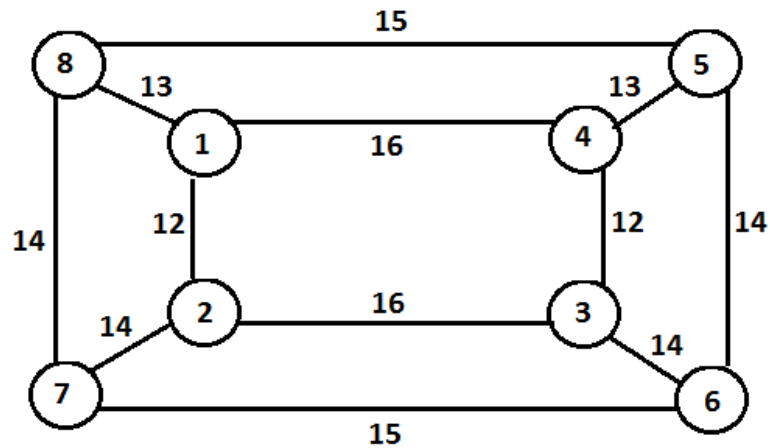
of fourth order  $h = 0.2$ , given that  $\frac{dy}{dx} = \sqrt{x^2 + y^2}$ ;  $y(0) = 0.8$

14. a) Prove that a graph 'G' is disconnected iff its vertex 'v' can be partitioned in to two non-empty disjoint subsets  $v_1$  and  $v_2$ , such that there exists no edge in G whose one end vertex is in the subset  $v_1$  and the other in subset  $v_2$ .

**OR**

- b) Prove that every circuit has an even number of edges in common with only cutset.

15. a) Obtain a minimum spanning tree in the network using Kruskal's algorithm



**OR**

- b) Prove that the Dijkstra's algorithm finds the SD from a fixed vertex  $v$  to any vertex  $i$  in the network, if there is a path from  $v$  to  $i$ .

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