

**Time: 3 Hours****Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) Write the applications of FEM
- b) Define material discontinuity
- c) Write the strain displacement matrix form and its
- d) State the significance of shape function.
- e) Write the equation for element stiffness matrix.
- f) Define element traction load vector
- g) Write the natural coordinate for cubic element.
- h) Define vector of shape function and element displacement vector.
- i) Write the parameters involved in assembly of elements.
- j) What is meant by isoparametric representation.

**PART-B****Answer one question from each unit****[5x12=60M]****UNIT-I**

2. Define the concept of finite element analysis and steps involved in solving finite element analysis. 12M

**(OR)**

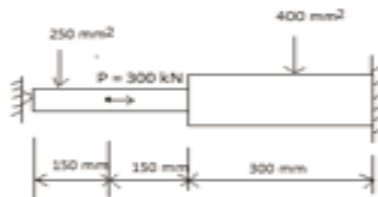
3. Discuss the following points to be considered while discretizing a structure for finite element analysis:
  - (i) Finite representation of infinite bodies. 3M
  - (ii) Element aspect ratio 3M
  - (iii) Higher order elements vs Refined mesh 3M
  - (iv) Numbering system to reduce band width 3M

**UNIT-II**

4. Explain strain displacement relationships in matrix form and constitutive relationships for plane stress and plane strain. 12M

**(OR)**

5. Determine the displacement vector, strains, stresses and reactions of the bar as shown in the figure. Take  $E=200$  GPa 12M



# AR13

**CODE: 13CE4031**

**SET-2**

## UNIT-III

6. Explain element stiffness matrix and derive stiffness matrix for 3 node triangular element. 12M  
(OR)
7. Explain the following terms: 12M  
Potential energy approach  
Element stiffness matrix  
Nodal loads  
Shape functions

## UNIT-IV

8. Explain and derive the stiffness matrix for four-node isoparametric quadrilateral element. 12M  
(OR)
9. Explain the concept of axisymmetric formulation for 2D elements. 12M

## UNIT-V

10. a) Explain isoparametric elements and their advantages. 6M  
b) Explain the basic principles of axis-symmetric element analysis. 6M  
(OR)
11. Describe and derive the procedure of obtaining stiffness matrix of an axisymmetric triangular element? 12M

# AR13

CODE: 13EE4029

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, April-2019

UTILIZATION OF ELECTRICAL ENERGY

(Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

## PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are the types of electric drives?  
b) What is meant by “load equalization”.  
c) Explain the advantages of induction heating?  
d) What are the different types of electric welding  
e) Define Lambert Cosine law  
f) What is flood lighting?  
g) What are the merits and demerits of D.C system of track electrification?  
h) What are the factors affecting the schedule speed of a train?  
i) What are the advantages of electric braking?  
j) Define specific energy consumption.

## PART-B

Answer one question from each unit

[5x12=60M]

### UNIT-I

2. a) Discuss the terms ‘continuous’, ‘intermittent’ and ‘variable’ loads with examples. 6M  
b) What is an electric drive? Classify various types of electric drives and discuss their merits and demerits. 6M

(OR)

3. a) “Torque in a shunt motor varies with the armature current” – Justify. 6M  
b) A squirrel cage induction motor takes twice full load current and develops half full load torque when started by a star delta starter. If started by an auto transformer with a 50% tapping, find the starting current and starting torque in terms of the full load values. 6M

### UNIT-II

4. a) Explain the method of induction heating and describe core less type induction furnace. 6M  
b) What are the advantages and disadvantages of dielectric heating? 6M

(OR)

# AR13

CODE: 13EE4029

SET-2

5. a) Compare ac and dc source as source of supply for arc welding. 6M
- b) Explain the following terms 6M
- i) Carbon arc welding process
- ii) Butt welding

## UNIT-III

6. a) Define (i) Luminous flux (ii) Candle Power(iii) Luminous intensity (iv) Luminance 6M
- b) What is an integrating sphere? Explain its use in illumination engineering. 6M

(OR)

7. a) Discuss the various factors that determine the design considerations for any lighting installation. 6M
- b) Compare Tungsten filament lamp with Fluorescent tubes 6M

## UNIT-IV

8. a) Write a short note on mechanics of train movement. 5M
- b) The speed-time curve of a train consists of 7M
- i). Uniform acceleration of 6 km/hr/s for 26 seconds;
- ii). free running for 10 minutes;
- iii).Uniform deceleration of 6 km/hr/s to stop the train;
- iv). A stop of 5 minutes.
- Find the distance between stations, the average, and scheduled speeds.

(OR)

9. a) Draw the speed-time curve of a main line service and explain how it works. 5M
- b) For a quadrilateral speed-time curve of an electric train, derive expression for the distance between stops and speed at the end of the coasting period. 7M

## UNIT-V

10. a) Describe the procedure for calculating the specific energy consumption of an electric train. 6M
- b) Explain the terms 6M
- i). Coefficient of adhesion
- ii). Tractive effort
- iii). Gradient

(OR)

11. a) What is coefficient of adhesion? How does it affect slipping of the driving wheel of a traction unit? 6M
- b) Derive an expression for the tractive effect developed by a train unit. 6M

# AR13

**CODE: 13ME4033**

**SET-2**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
(AUTONOMOUS)**

**IV B.Tech II Semester Regular & Supplementary Examinations, April-2019**

**PRODUCTION PLANNING AND CONTROL**

**(Mechanical Engineering)**

**Time: 3 Hours**

**Max Marks: 70**

## **PART-A**

**ANSWER ALL QUESTIONS**

**[1 x 10 = 10 M]**

1. a) What is forecasting
- b) What is production planning and control
- c) What is line balancing
- d) What is Capacity Planning
- e) What are the Basic Elements of JIT
- f) What is KANBAN system
- g) Expand the term LWKR
- h) Expand the term MWKR
- i) What is routing
- j) What is Dispatching

## **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

### **UNIT-I**

2. a) Explain clearly the pre-planning stage, planning stage and controlling stage of production planning and control. 6 M
- b) What are the objectives of production planning and control 6 M

**(OR)**

3. a) What are the various forecasting methods 6 M
- b) Explain about moving average method 6 M

### **UNIT-II**

4. a) Explain Aggregate planning and its strategies 6 M
- b) Explain in detail about effective capacity 6 M

**(OR)**

5. a) Write the functions of MPS (Master Production Schedule) 6 M
- b) Explain the Preparation of MPS 6 M

### **UNIT-III**

6. a) Explain in detail about EOQ models 6 M  
b) Explain P-System and Q- System. 6 M  
(OR)  
7. a) Explain basic elements of JIT inventory system 6 M  
b) Explain MRP 6 M

### **UNIT-IV**

8. a) Write the Characteristics of job shop scheduling 4 M  
b) A college painting contractor has five blocks to paint, 8 M  
following are the estimated times required to paint each  
block and due date for completion

| House | Estimated time<br>(Days) | Due date |
|-------|--------------------------|----------|
| A     | 3.5                      | 9        |
| B     | 5.0                      | 12       |
| C     | 3.5                      | 8        |
| D     | 4.0                      | 15       |
| E     | 6.0                      | 13       |

Use the Shortest Processing Time rule to sequence the  
five jobs Compute  
average flow time and average tardiness per job using  
this sequence

(OR)

9. a) Explain in detail the line of balancing technique 6 M  
b) What are the assumptions of flow shop scheduling 6 M

### **UNIT-V**

10. a) What are the factors affecting routing procedure 6 M  
b) Explain about routing sheets 6 M  
(OR)  
11. a) What is expediting 4 M  
b) Explain in detail various types of expediting 8 M

**Time: 3 Hours****Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) Name the available two kinds of cell splitting techniques?  
b) What is meant by frequency reuse  
c) What is meant by Fading  
d) List any two Measurement methods for Interferences.  
e) Define Non - Omni directional antennas  
f) List different types of antennas used for improving coverage  
g) What is meant by channel sharing  
h) Draw the diagram of frequency management chart  
i) List the services offered by GSM  
j) Write one difference between GSM and CDMA techniques.

**PART-B****Answer one question from each unit****[5x12=60M]****UNIT-I**

2. a) Describe the elements of basic cellular systems with block diagram. 6 M  
b) What are the different types of cells used in wireless mobile communications and explain? 6 M

**(OR)**

3. a) What are the categories of performance criteria available for cellular communication systems? 6 M  
b) Describe the 3<sup>rd</sup> & 4<sup>th</sup> generation wireless mobile systems with applications 6 M

**UNIT-II**

4. a) Summarize different types of Indoor propagation models 6 M  
b) Find the Cochannel Interference Area Which Affects a Cell Site 6 M

**(OR)**

5. a) What are the Two major types of Non-co-channel interference and explain 6 M  
b) Find the Cochannel Interference Area from a Mobile Receiver. 6 M

**UNIT-III**

6. a) Explain cell site antennas with neat diagrams 6 M  
b) Explain the concept of diversity antenna spacing in cell site with simple diagrams 6 M

**(OR)**

7. a) What is meant by handoff? Describe the classification of handoff processes 6 M  
b) Mention and explain different types of Vehicle locating methods 6 M

**UNIT-IV**

8. a) Explain Channel sharing and borrowing with respect to mobile communication 6 M  
b) What are the different types of channel assignment approaches for cell sites? Explain 6 M

**(OR)**

9. a) What is the importance of frequency management chart? Give the structure of the channels in 800 MHz system with frequency ranges. 6 M  
b) Describe the procedure of paging channels used for the land originating calls 6 M

**UNIT-V**

10. a) Explain CSMA technique with diagrams 6 M  
b) Explain Pure ALOHA & Slotted ALOHA and mention differences 6 M

**(OR)**

11. a) Explain SDMA technique with diagrams 6 M  
b) Explain the principle of TDMA and CDMA techniques with the help of neat Diagrams. 6 M

# AR13

**CODE: 13CS4023**

**SET-2**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
(AUTONOMOUS)**

**IV B.Tech II Semester Regular & Supplementary Examinations, April-2019**

**SOFTWARE TESTING METHODOLOGIES  
(Computer Science and Engineering)**

**Time: 3 Hours**

**Max Marks: 70**

## **PART-A**

**ANSWER ALL QUESTIONS**

**[1 x 10 = 10 M]**

1. a) Define testing and debugging
- b) What are remedies for test bugs? Explain.
- c) What is Data-flow testing?
- d) Explain about path selection in transaction-flow testing.
- e) What is domain testing?
- f) Where do domains come from?
- g) What are distributive laws?
- h) What goes wrong with predicates?
- i) Define state-transition table.
- j) Explain state-transition table with example.

## **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

### **UNIT-I**

2. a) Describe the fundamentals of Path Selection Criteria with suitable examples. 6
  - b) How should a tester choose a path testing criteria? Provide a scenario 6
- (OR)**
3. a) What are the three kinds of loops? Explain with example. 6
  - b) What are predicates, path predicates and achievable paths? 6



## **UNIT-II**

4. a) Describe the complications of transaction flows. 6  
b) Explain about sensitization in transaction-flow testing 6

**(OR)**

5. a) Describe application, tools and effectiveness of data-flow testing 6  
b) Why isn't static analysis enough? Why is testing required? Could not a vastly expanded language processor detect anomalies? 6

## **UNIT-III**

6. a) How to test two-dimensional domains? Explain. 6  
b) What is the strategy of domain testing? Explain in brief. 6

**(OR)**

7. a) Discuss about closer compatibility and span compatibility. 6  
b) What are ugly domains? How testers and programmers treat them. 6

## **UNIT-IV**

8. a) Explain the Software implementation of state graphs. 6  
b) Discuss about the Impact of bugs in state testing 6

**(OR)**

9. a) Discuss about decision tables and structure with example. 6  
b) How do the Number of states in a state graph effect testing and what are the Properties of relations? 6

## **UNIT-V**

10. a) What is Rapid testing and explain with an example scenario. 6  
b) What are the Applications of graph matrices? 6

**(OR)**

11. Write about Performance testing of a data base application and HTTP connection for website access. 12

# AR13

**CODE: 13CS4024**

**SET-2**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
(AUTONOMOUS)**

**IV B.Tech II Semester Regular & Supplementary Examinations, April-2019**

## **SOFTWARE PROJECT MANAGEMENT (Information Technology)**

**Time: 3 Hours**

**Max Marks: 70**

### **PART-A**

**ANSWER ALL QUESTIONS**

**[1 x 10 = 10 M]**

1. a) Define Software Project Management.  
b) What is waterfall model?  
c) What is Reducing Software product size?  
d) What are the principles of conventional software Engineering?  
e) Define Software process workflows.  
f) What is a Periodic status assessment?  
g) Define schedule estimating.  
h) What is Project Environment?  
i) Define a Work breakdown structures.  
j) What is cost?

### **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

#### **UNIT-I**

2. a) Discuss about the advantages and disadvantages of water fall model. [8 M]  
b) What are the common causes for Software Economics? [4 M]
- (OR)**
3. a) Explain pragmatic software cost estimation. [8 M]  
b) Explain conventional software Management performance? [4 M]

#### **UNIT-II**

4. a) Discuss the important Principles of principles of modern software management [8 M]  
b) Discuss the principles of conventional software Engineering. [4 M]
- (OR)**
5. a) Discuss the Principles of Modern Software Management. [8 M]  
b) Explain about transitioning to an iterative process? [4 M]

# AR13

**CODE: 13CS4024**

**SET-2**

## UNIT-III

6. a) Discuss Periodic status assessments. [6 M]  
b) Explain Checkpoints of the process [6 M]  
(OR)  
7. a) Discuss the Software process workflows. [6 M]  
b) Explain about Periodic status assessments. [6 M]

## UNIT-IV

8. a) Explain about evolution of Organizations [6 M]  
b) Explain Line-of -Business Organizations? [6 M]  
(OR)  
9. a) Explain Metrics automation. [6 M]  
b) What are the roles in Project Organizations? [6 M]

## UNIT-V

10. a) Explain The command Center Processing and Display system- Replacement (CCPDS-R). [8 M]  
b) Discuss about Software Metrics, Metrics automation [4 M]  
(OR)  
11. Explain pragmatic Software Metrics [12 M]