

# AR13

**CODE: 13CE4031**

**SET-2**

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

**IV B.TECH II SEMESTER REGULAR EXAMINATIONS, APRIL-2017  
FINITE ELEMENT METHODS**

**(Civil Engineering)**

**TIME: 3 Hours**

**Max Marks: 70**

**PART-A**

**ANSWER ALL QUESTIONS**

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

1.
  - a. What is discretization?
  - b. What is plane stress?
  - c. Explain the concept of FEM?
  - d. What is 'Two Dimensional FEM'?
  - e. Explain Geometric invariance.
  - f. What are area and volume coordinate systems?
  - g. What is stiffness?
  - h. What are 'Serendipity elements'?
  - i. Draw an 8 noded iso-parametric element.
  - j. What is a shape function?

**PART-B**

**Answer one question from each unit**

**[5 x 12 = 60 M]**

**UNIT-I**

2.
  - a) Explain the importance of boundary conditions in analysis using FEM. 4M
  - b) Derive the equations of equilibrium and write the strain displacement relationships in matrix form. 8M

**(OR)**

3.
  - a) With the help of neat diagram, describe the various components of stress and strains. 6M
  - b) Derive the stress-strain relationship and strain displacement equation. 6M

## UNIT-II

4. Derive stiffness equations for a bar element from one dimensional second order equation by variational approach 12M

(OR)

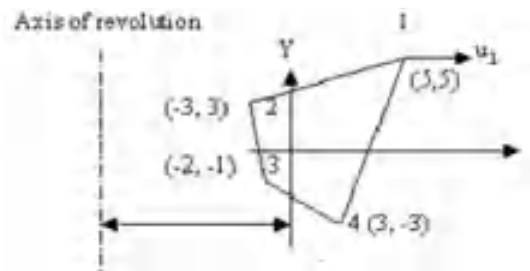
5. What are Global and Local coordinate systems? How is natural coordinate system useful in FEM analysis? 12M

## UNIT-III

6. Derive the stiffness matrix for a CST element using Potential Energy Approach. 12M

(OR)

7. Following figure shows an iso-parametric two dimensional finite element. Construct the Jacobian matrix 'J'. 12M



## UNIT-IV

8. Discuss the importance of Iso-parametric concept used in FEM. Name the Iso-parametric elements. How is assembly done in Iso-parametric formulation? 12M

(OR)

9. Explain in detail how the element stiffness matrix and the load vector are evaluated in Iso-parametric formulation. 12M

## UNIT-V

10. Explain different solution techniques for static loads with different assembly of elements. 12M

(OR)

11. Explain axi-symmetric analysis using appropriate examples. 12M

# AR13

CODE: 13EE4029

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
(AUTONOMOUS)

IV B.TECH II SEMESTER REGULAR EXAMINATIONS, APRIL-2017

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) Write electrical factors affecting the selection of motor.  
b) Mention advantages of electric drive over other drives?  
c) Explain the terms heating time constant and cooling time constant.  
d) What is the difference between plastic welding and fusion welding.  
e) Why sodium vapour lamps are preferred for street lighting?  
f) What are the drawbacks of direct lighting system  
g) Define crest speed.  
h) Why a series motor is preferred for the electric traction  
i) What is regenerative braking?  
j) What are the various types of braking methods?

## PART-B

Answer one question from each unit

[5x12=60M]

### UNIT-I

2. a) Explain what you mean by steady state and transient state characteristics of an electric drive. Explain clearly why it is desirable to study the transient behavior of the drive? **6M**  
b) Derive an expression for acceleration time of an electric drive under the conditions (i) constant motor and load torque (ii) constant load torque but linearly variable motor torque. **6M**

(OR)

3. a) Explain what you mean by Load Equalization and how it is accomplished. **6M**  
b) Though a.c. is superior to d.c. for electric drives, sometimes d.c. is preferred. Give the reasons and mention some of the applications. **6M**

### UNIT-II

4. a) Explain the methods of electric heating. What are its advantages and disadvantages? **6M**  
b) Explain about dielectric heating and state its applications. **6M**
- (OR)
5. a) Name and describe various types of resistance welding processes? **6M**  
b) Describe various types of electric arc welding processes. **6M**

# AR13

CODE: 13EE4029

SET-1

## UNIT-III

6. a) Describe with a neat sketch the principle of operation of fluorescent lamp. Mention the function of each component. **8M**  
b) A lamp of 500 candle power is placed at the centre of a room, 20m×10m×5m. Calculate the illumination in each corner of the floor and a point in the middle of a 10m wall at a height of 2m from floor. **4M**
- (OR)**
7. a) Explain the principle of street lighting. Show different types of street lighting with neat sketches. **7M**  
b) What are polar curves? Explain Rousseau diagram and its importance in illumination engineering? **5M**

## UNIT-IV

8. a) Briefly explain the a.c. motors used in traction **4M**  
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 **8M**
- (OR)**
9. a) What are the various methods of electric braking? Explain these methods in reference to a DC series motor. **6M**  
b) Discuss the special features of electric traction motor. **6M**

## UNIT-V

10. a) What is specific energy consumption of a train? Discuss various factors affecting it. **6M**  
b) Explain briefly the tractive effort required, while the train is moving up the gradient and down the gradient **6M**
- (OR)**
11. a) Explain the terms 'dead weight', 'effective weight' and adhesive weight in a locomotive. **6M**  
b) What is tractive effort of a train and what are its functions. **6M**

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

1. a) Distinguish between production planning and production control  
b) For a 7-month moving average, what is the value of smoothing constant?  
c) Inputs of aggregate planning  
d) What is efficiency of the line?  
e) Define EOQ  
f) Differentiate P-System and Q-System  
g) State various priority rules in Sequencing  
h) What is Johnson rule  
i) Bill of materials  
j) Levels of dispatching

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

2. a) Briefly explain the functions of production planning and control **6M**  
b) Discuss job order production with their merits and demerits **6M**
- (OR)**
3. a) Why forecasting is necessary in production? **6M**  
b) City jail administrator has been using a 12 month moving average to forecast jail cell demand but wishes to convert to a simple exponential smoothing model. The current month's forecast is for 450 inmates. **6M**  
i) The actual demand is 410. What should be the forecast demand for next month?  
ii) The actual demand for next month is 520. What should be the following months forecast

**UNIT-II**

4. a) Discuss about aggregate planning and its importance **6M**  
b) What is capacity planning? State its importance **6M**
- (OR)**
5. a) Consider the following problem of assembly line balancing: **8M**

Task	A	B	C	D	E	F	G	H
Immediate predecessor	-	A	B	C	D	E	F	G
Task time (min)	0.9	0.4	0.6	0.2	0.3	0.4	0.7	1.1
Total task time (min)	4.6							

Assuming that 55 minutes per hour are productive, compute the cycle time needed to obtain 50 units per hour as the output. (i) Determine the minimum number of workstations required and assign tasks based on longest task time rule. (ii) Compute line utilization

- b) Explain the functions and objectives of MPS **4M**

### UNIT-III

6. a) Derive the expression for E.O.Q for finite rate of replenishment (EPQ) and uniform rate of demand. **8M**  
b) If the demand is 200units/month. Order cost is Rs.25 per order and storage cost of an item is Rs.1 per month. Find the optimal size and Total cost? **4M**
- (OR)**
7. a) What is MRP? Explain its inputs, logic and outputs **6M**  
b) Explain the benefits of JIT **6M**

### UNIT-IV

8. a) Explain the parameters used for comparing the performance of the various sequencing rules **4M**  
b) Six jobs go first on machine A, then on machine B and lastly on machine C. The following table gives the machine time for the six jobs and the three machines. Determine a sequence for the jobs that will minimize the total elapsed time **8M**

Jobs	Processing time (In hours)		
	Machine A	Machine B	Machine C
1	8	3	8
2	3	4	7
3	7	5	6
4	2	2	9
5	5	1	10

**(OR)**

9. a) Write about the characteristics of job shop scheduling **4M**  
b) Using graphical method, Calculate the minimum time needed to process the following jobs on the machines shown below, i.e., for each machine find the job which should be done first. Also calculate the total time required to complete both the jobs. **8M**

Job1	sequence	A	B	C	D	E
	Time (hours)	6	8	4	12	4
Job2	sequence	B	C	A	D	E
	Time (hours)	10	8	6	4	12

### UNIT-V

10. a) What are the factors that affecting the routing procedure **6M**  
b) Discuss in detail the procedure of routing. **6M**
- (OR)**
11. a) Discuss the applications of computers in Production Planning & Control **6M**  
b) Explain various sequential steps of dispatch procedure **6M**

# AR13

**CODE: 13EC4036**

**SET-2**

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

**IV B.TECH II SEMESTER REGULAR EXAMINATIONS, APRIL-2017**

**CELLULAR AND MOBILE COMMUNICATIONS**

**(Electronics & Communication Engineering)**

**Time: 3 Hours**

**Max Marks: 70**

## **PART-A**

**ANSWER ALL QUESTIONS**

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

1.
  - a) List the limitations of conventional mobile telephone system.
  - b) Why 800 MHz frequency is selected for mobiles?
  - c) List different types of non co channel interferences.
  - d) What is meant by foliage loss?
  - e) What is glass mounted antenna?
  - f) Distinguish between dropped call and blocked call.
  - g) What are the channel numbers of Setup channels of block A and block B?
  - h) What is meant by a forward link channel?
  - i) What are the objectives of GSM network?
  - j) Mention the various multiple access schemes used in wireless communication.

## **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

### **UNIT-I**

2.
  - a) Discuss the performance criteria of a basic cellular mobile system. **6M**
  - b) Draw the frequency reuse patterns for K=4 and K=7 **6M**

**(OR)**
3.
  - a) Explain the operation of cellular system. **6M**
  - b) Prove cluster size K=4 is sufficient to meet desired C/I in directional antenna system. **6M**

### **UNIT-II**

4.
  - a) Explain mobile point-to-point model. **6M**
  - b) Explain the effects of human made structures for mobile propagation in open area. **6M**

**(OR)**
5.
  - a) Explain Land to mobile propagation over water. **6M**
  - b) Explain near-end and far-end interference in mobile communication. **6M**

### **UNIT-III**

6. a) Explain horizontally and vertically oriented space diversity antennas. **6M**  
b) Explain Vehicle locating methods. **6M**  
(OR)  
7. a) What are the different types of antennas used for improving coverage at cell site? **6M**  
b) Explain the methods used to detect the requirement of Handoff. **6M**

### **UNIT-IV**

8. a) What is frequency management? Explain? **6M**  
b) Explain the concept of channel assignment. **6M**  
(OR)  
9. a) Explain the concept of Underlay – Overlay. **7M**  
b) What is Hybrid Channel assignment? Explain. **5M**

### **UNIT-V**

10. a) Explain different GSM channels. **6M**  
b) Explain different carrier sense multiple access protocols in detail. **6M**  
(OR)  
11. a) Explain the architecture of NA-TDMA. **6M**  
b) Explain slotted ALOHA protocol in detail. **6M**

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# AR13

**CODE: 13CS4023**

**SET-1**

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

**IV B.TECH II SEM REGULAR EXAMINATIONS, APRIL, 2017**

**SOFTWARE TESTING METHODOLOGIES**

**(Computer Science & Engineering)**

**Time: 3 Hours**

**Max Marks: 70**

## **PART-A**

**ANSWER ALL QUESTIONS**

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

1. a) Define Formal Inspections?  
b) Define Desk-Checking?  
c) Define Slicing?  
d) Define Acceptance Testing?  
e) Define Path Sensitizing?  
f) Define Software Quality Assurance?  
g) Define Unreachable Code?  
h) Define Partial Ordering Relations?  
i) Define Static Testing?  
j) Distinguish Nice and Ugly Domains?

## **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

### **UNIT-I**

2. a) State and Explain various kinds of Predicate blindness with examples? 8M  
b) Discuss various flow graph elements with their notations? 4M
- (OR)**
3. a) Explain White-box testing and Behavioral Testing? 6M  
b) State and Explain various path selection rules? 6M

### **UNIT-II**

4. a) Distinguish control flow and transaction flow? 6M  
b) Explain the terms Dicing, Dataflow and debugging? 6M
- (OR)**
5. a) What are data-flow anomalies? How data flow testing can explore them? 12M

### **UNIT-III**

6. a) Explain how One-Dimensional domains are tested? 6M  
b) Discuss with example the equal-span range /domain compatibility bugs? 6M
- (OR)**
7. a) Explain various properties related to Ugly-domains? 6M  
b) Explain Huang's Theorem with examples? 6M

# AR13

**CODE: 13CS4023**

**SET-1**

## UNIT-IV

- |    |    |                                                                                     |    |
|----|----|-------------------------------------------------------------------------------------|----|
| 8. | a) | Explain the types of bugs that can cause state graphs?                              | 6M |
|    | b) | What are the principles of state testing. Discuss its advantages and disadvantages? | 6M |
|    |    | (OR)                                                                                |    |
| 9. | a) | Explain about ambiguities and contradictions in specifications?                     | 6M |
|    | b) | What are Software implementation issues in state testing?                           | 6M |

## UNIT-V

- |     |    |                                                      |    |
|-----|----|------------------------------------------------------|----|
| 10. | a) | Explain the node reduction algorithm?                | 6M |
|     | b) | Explain about graph matrices and their applications? | 6M |
|     |    | (OR)                                                 |    |
| 11. | a) | Discuss the algorithm for finding set of all paths?  | 8M |
|     | b) | How can the graph be represented in matrix form?     | 4M |

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# AR13

**CODE: 13CS4024**

**SET-2**

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

**IV B.TECH II SEM REGULAR EXAMINATIONS, APRIL, 2017**

**SOFTWARE PROJECT MANAGEMENT**

**(Information Technology)**

**Time: 3 Hours**

**Max Marks: 70**

## **PART-A**

**ANSWER ALL QUESTIONS**

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

1. a) What is Line of Business Life Cycle?  
b) Define ROI?  
c) What are the Levels of Software Process?  
d) Differentiate Inception Phase and Elaboration Phase?  
e) Define Milestone?  
f) What is Artifact?  
g) List out Software Assessment Team Activities?  
h) What are the Planning Guidelines?  
i) Define MTBF?  
j) What is Metric?

## **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

### **UNIT-I**

2. a) Discuss the Progress of Conventional Software Project? **4M**  
b) Explain Waterfall Model in Detail? **8M**
- (OR)**
3. a) What are the Generations of Software Economics? **8M**  
b) Discuss the Results of Conventional software project design Reviews? **4M**

### **UNIT-II**

4. a) How to Achieve Required Quality Improvements of a Process? **4M**  
b) Discuss the Levels of Software Process? **8M**
- (OR)**
5. a) Discuss the Approaches for solving Conventional Problems? **4M**  
b) Illustrate the Lifecycle Phases in Detail? **8M**

### **UNIT-III**

6. a) Discuss the Engineering Artefact Sets of a Process? **6M**  
b) Explain Construction Phase and Transition Phase? **6M**
- (OR)**
7. a) Compare Major Milestone and Minor Milestone? **6M**  
b) Explain the Concept of Iteration Workflow? **6M**

# AR13

**CODE: 13CS4024**

**SET-2**

## UNIT-IV

8. a) Explain the Project organization with a neat Diagram? **8M**  
b) Discuss the Software Project Team Evolution Over the Life Cycle? **4M**  
**(OR)**
9. a) Differentiate Software Architecture team Activities and Software Management Team Activities? **6M**  
b) Define Round Trip Engineering and Explain in Detail? **6M**

## UNIT-V

10. a) How to Find Budget Cost and Expenditure? **6M**  
b) List out the Quality Indicators and Explain? **6M**  
**(OR)**
11. a) Explain the Tailoring Process Framework? **6M**  
b) What are the Primary Dimensions of Process Variability? **6M**

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