

AR13

CODE: 13CE4031

SET-1

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

**IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018
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 finite element method?
 - b. What is plane strain?
 - c. What is a node?
 - d. Define constant strain triangle?
 - e. Write the stiffness matrix of four noded quadrilateral element.
 - f. What are axi-symmetric elements?
 - g. What is convergence?
 - h. State the stress equilibrium conditions.
 - i. Explain load vector?
 - j. What is 'Lagrangian element'?

PART-B

Answer one question from each unit

[5 x 12 = 60 M]

UNIT-I

2. a) Explain the steps involved in FEM and briefly describe the merits and demerits of using FEM. 6M
b) If a displacement field is described as follows:
 $u = (-x^2 + 2y^2 + 6xy)10^{-4}$ and $v = (3x + 6y - y^2)10^{-4}$;
determine the strain components ϵ_{xx} , ϵ_{yy} , ϵ_{xy} at the point $x=1$; $y=0$. 6M

(OR)

3. a) What is plane stress and plane strain? Explain with examples. 6M
b) What is Rayleigh-Ritz method and explain its functional approximation. 6M

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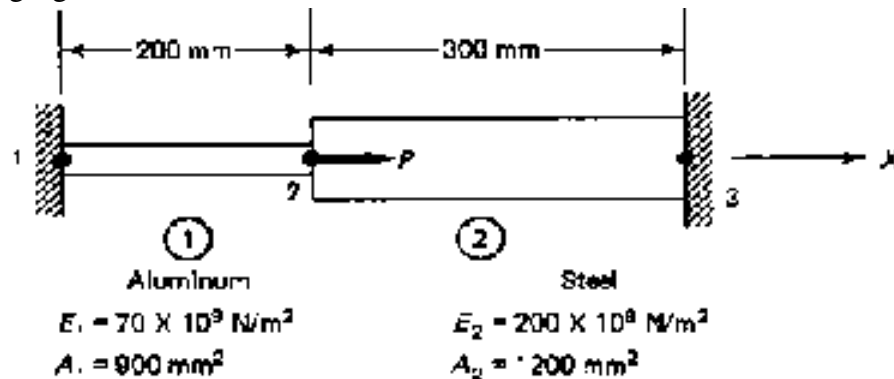
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UNIT-II

4. With a suitable example explain the formulation of finite element equations by total potential energy approach. Assume suitable data for the example using One-Dimensional analysis. 12M

(OR)

5. Determine the displacements and support reactions for the uniform bar shown in the following figure. $P = 300 \text{ kN}$. 12M



UNIT-III

6. Generate the element stiffness matrix for a 4 node rectangular element in plane stress condition. 12M

(OR)

7. Derive shape functions for a triangular linear element in global Co-ordinate system. 12M

UNIT-IV

8. What is iso-parametric formulation? Explain the CST element and its formulation. 12M

(OR)

9. With suitable examples explain the meaning and formulations of properties of axis-symmetric elements. State their applications. 12M

UNIT-V

10. What is Numerical Integration and Static condensation? Explain the assembly of different elements. 12M

(OR)

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

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) Define the term “continuous rating”?
- b) What is an electric drive?
- c) What type of DC Generator is used in electric arc welding?
- d) Define illumination?
- e) What are the two laws of illumination?
- f) What is meant by resistance welding?
- g) What is stroboscopic effect?
- h) What is meant by speed – time curve?
- i) How does coefficient of adhesion vary with the increase in speed?
- j) What is meant by schedule speed of train?

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

2. Explain about load Equalisation? Explain how this is achieved in electrical industry? 12M

(OR)

3. Discuss various factors which affect the selection of motor for a particular drive. 12M

UNIT-II

4. Describe briefly the methods of direct and indirect resistance heating. List the applications of these two methods. 12M

(OR)

5. What is dielectric heating? And explain how is this different from induction heating? 12M

UNIT-III

6. Describe the construction and principle of operation of (i) Sodium vapour lamp and (ii) Mercury vapour lamp. 12M

(OR)

7. Why is tungsten selected as the filament material and on what factors does it light depend? 12M

UNIT-IV

8. Briefly discuss the special design features of traction motors. 12M

(OR)

9. An electric train weighing 500 tons moves up a gradient of 1% with following speed – time curve: 12M

- (i) Acceleration of 1.5 kmphs for 30 secs. (ii) Constant speed for 45 secs. (iii) Breaking at 5 kmphs to rest.

Determine the specific energy consumption if tractive resistance is 50 N per tonne, rotational inertia 10% overall efficiency of the system 85%.

UNIT-V

10. Explain the mechanics of train movement and tractive effort for propulsion of train. 12M

(OR)

11. A suburban electric train has a maximum speed of 80 kmph. The scheduled speed including a station stop of 30 sec is 60 kmph. If the acceleration is 1.5 kmphs, determine the value of retardation if the average distance between stops is 3 kms. 12M

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

1. a) Define PPC
- b) What are the types of forecasting
- c) What is line balancing
- d) What are factors affecting effective capacity
- e) Write the Concept of JIT
- f) Benefits of JIT
- g) Expand the term SPT
- h) Expand the term FCFS
- i) What is Dispatching
- j) What is Expediting

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

2. a) What are the functions of production planning and control
- b) Explain Exponential Smoothing Method

8 M

4 M

(OR)

3. a) Explain the aspect of Long-term Forecasting
- b) Explain the aspect of Short-term Forecasting

6 M

6 M

UNIT-II

4. a) Explain about Aggregate Planning.
- b) What are the Factors Influencing Effective Capacity

6 M

6 M

(OR)

5. a) Explain Assembly Line Balancing
- b) What is Master Production Schedule

6 M

6 M

UNIT-III

6. a) Explain the functions of inventories
- b) Write short notes on Inventory control systems

6 M

6 M

(OR)

7. a) The annual demand for an automobile component is 50000 units. The carrying cost is Rs. 0.70/unit/year, the ordering cost is Rs.50.00 per order and the shortage cost is Rs. 25.00/unit/year. Find the optimal values of the following:

8 M

- i) Economic Ordering Quantity
- ii) Maximum inventory
- iii) Maximum shortage quantity
- iv) Cycle time

- b) Explain the Concept of JIT technique

4 M

UNIT-IV

8. a) Explain in detail the line of balancing technique
- b) What are the characteristics of flow shop scheduling

6 M

6 M

(OR)

9. a) Differentiate various scheduling policies
- b) Explain the concept Random sequencing

6 M

6 M

UNIT-V

10. a) What are the various activities of dispatcher
- b) What is routing

8 M

4 M

(OR)

11. a) Write the applications of computer in production planning and control
- b) Explain in detail the dispatching procedure

6 M

6 M

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SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
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IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018

CELLULAR AND MOBILE COMMUNICATIONS (Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Why polygon cell geometry is generally used in cellular system?
b) What are operating frequency bands in 2G and 3G cellular system.
c) What are the factors influencing small-scale fading.
d) Define coherence bandwidth.
e) Give the characteristics of Low gain antennas.
f) Define Dropped Call rates.
g) What is Channel borrowing strategy?
h) Discuss grouping in Channels.
i) What is the principle involved in SDMA.
j) Outline the GSM frame structure.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Discuss the performance criteria required for attaining Voice and Service quality in cellular and mobile communication system. 6M
b) Greater the value of C/I, lower is the Cochannel Interference. 6M
Justify with example.
- (OR)**
3. a) Explain the operation of basic cellular system. 6M
b) Explain how cell splitting technique improves the utilization of spectrum efficiency in cellular system. 6M

UNIT-II

4. a) Develop the relation for obtaining the propagation path loss from land-to-mobile transmission over flat open area. 6M
b) Define Co-channel interference and explain any one method for measurement of interference. 6M
- (OR)**
5. a) Briefly discuss types of small-scale fading based on multipath parameters. 6M
b) Explain how directional antennas reduces co-channel interference in a system with 7- cell frequency reuse 6M

UNIT-III

6. a) Illustrate the significance of antenna parameters and their effects in Antenna system design for mobile and cellular system. 6M
b) Define handoff and discuss different types of handoff. 6M
- (OR)**
7. a) What is Diversity ? Explain space diversity antenna used at cell site. 6M
b) Explain two methods used for locating the vehicle by installing the equipment in the vehicle. 6M

UNIT-IV

8. a) Explain how channel assignments is done to mobile sites. 6M
b) Write short notes on Grouping and Paging in channels. 6M
- (OR)**
9. a) Discuss the concept of frequency management concern to the numbering the channels. 6M
b) Write about dynamic channel assignment schemes in detail. 6M

UNIT-V

10. a) Bring out the differences between TDMA and CDMA multiple access schemes. 6M
b) Define Packet Radio and explain how throughput is improved in Slotted ALOHA. 6M
- (OR)**
11. a) Illustrate the functionality of each subsystem of GSM architecture. 6M
b) Describe the flow of collision avoidance in Carrier Sense multiple access scheme. 6M

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SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
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IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018

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 structural testing.
- b) What are the elements of flow graph?
- c) Give an example of forgiving Data Flow anomaly state graph.
- d) Give an example of a transaction-flow
- e) What is domain testing?
- f) Define linear vector space
- g) Write absorption rule.
- h) Give examples of four variable KV-chart.
- i) What is the problem with pictorial graphs?
- j) What is partial ordering relation?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Is complete testing possible? Explain. 6
- b) What are the three kinds of loops? Explain with example. 6

(OR)

3. a) What are cases for single loop? Explain with examples 6
- b) Distinguish between testing and debugging. 6

UNIT-II

4. a) Define transaction flow testing. Explain transaction flow structure. 6
b) Explain about the data-flow model with example. 6
(OR)
5. a) What are data-flow anomalies? Explain. 6
b) Discuss about transaction-flow structure. 6

UNIT-III

6. a) What are the restrictions of domain testing? Explain 6
b) Discuss about domains and testability. 6
(OR)
7. a) Define Path products & path expression, 6
b) With an example explain the reduction procedure. 6

UNIT-IV

8. a) Describe lower path count arithmetic with example. 6
b) Give an example to illustrate how to convert a specification into a state graph and how contradictions can come about. 6
(OR)
9. a) Write motivational overview of logic-based testing. 6
b) Justify the following statement: “Decision tables can also be used to examine a program’s structure” 6

UNIT-V

10. a) Write about the usage of JMeter tool for function testing. 6
b) Discuss about win-runner testing tool. 6
(OR)
11. a) Explain the creation of test script for unattended testing. 6
b) Discuss the synchronization of test case 6

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**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
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IV B.Tech II Semester Regular & Supplementary Examinations, April, 2018

**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 software cost estimation?
c) What is software Management performance?
d) What is Iteration workflows?
e) Define Work breakdown structures.
f) What is an Project Organizations?
g) Define CCPDS-R.
h) What is Process Automation?
i) Define a Software Metrics.
j) What is cost?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Discuss about the improvements that can be made to Spiral Model to avoid risks. [8 M]
b) What are the common causes for software cost estimation ? [4 M]
(OR)
3. a) Explain Software Economics. [8 M]
b) Explain conventional software Management performance? [4 M]

UNIT-II

4. a) Discuss the important Principles of improving software processes [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]

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UNIT-III

6. a) Discuss Iteration workflows. [6 M]
b) Explain Major mile stones, Minor Milestones [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 Work breakdown structures [6 M]
b) Explain cost and schedule estimating? [6 M]
(OR)
9. a) Explain Line-of -Business Organizations. [6 M]
b) What are the roles in Project Organizations? [6 M]

UNIT-V

10. a) Explain The seven core Metrics. [8 M]
b) Discuss about Software Metrics, Metrics automation [4 M]
(OR)
11. Explain pragmatic Software Metrics [12M]