AR13

CODE: 13CE4025 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Supplementary Examinations, January-2019

ESTIMATION AND QUANTITY SURVEYING
(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Write units of measurement for lime concrete and plastering in MKS syatem.
   b) What is "Preliminary Estimate"?
   c) What is "DPC"?
   d) What is Individual wall method of estimating a building?
   e) What is Lead and Lift?
   f) Write specifications for R.C.C?
   g) Write the order of booking dimensions.
   h) What is the expected out turn of cement concrete 1 : 2 : 4 per mason per day?
   i) The area of a sloping surface of a protective embankment of mean height d, side slopes S : 1 and length L is
   j) What is approximate estimation?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a. Explain in detail any two approximate methods of Estimates. 6M
   b. Estimate the quantities of following items of a residential building given in fig1. (By center line method) i) Earthwork in Excavation in foundation. ii) Lime concrete in foundation. 6M

(OR)

3. a) Differentiate between detailed estimate and abstract estimate. 6M
   b) Calculate quantity of following items of work and enter the same in standard format of measurement sheet with brief description of item 6M
   (i) Painting of all wall with water bound distemper
   Note: Make suitable assumptions where necessary.
   Figure 1

UNIT-II

4. Reduced level of Ground along centreline of a proposed road from chainage 20 to 30 is given below. The formation level at 20th chainage is 107 and the road is in downward gradient of 1 in 150 up to chain age 24 and then gradient changes to 1 in 100 downward. Formation width of road is 10m and side slopes of banking are 2:1 (Horizontal : Vertical) length of chain is 30m 12M

Draw the longitudinal cross section of road and typical cross section and prepare an estimate of earth work at a rate of 500/m^3

Change	20	21	22	23	24	25	26	27	28	29	30
RL of Ground	104.8	105.4	105.0	105.6	105.2	104.0	104.8	104.10	104.6	104	103.3

RL of formation=106

(OR)

5. Estimate the quantity of earthwork in cutting for a road of 10 m formation width the following data using mean sectional area method. Side slope is 2:1 (H:V) and no cross slope. 12M

Chainage (meters	0	40	80	120	160
Ground Level	81.5	80.2	82.4	85.1	84.5
Formation Level	75	Rising Gradient 1in 25			

UNIT-III

6. Prepare the rate analysis for finding out the rate per cu.m of cement concrete1:2:4 with stone ballast 20 mm. 12M

(OR)

7. Describe the procedure for the calculation of rate per unit cu.m of RCC work in slabs etc., 1:1:2 work excluding steel but including cantering, shuttering, bending and binding 12M

UNIT-IV

8. Give the bar bending schedule of the slab as given in fig2. 12M

(OR)

9. Calculate the quantity of steel required for an RCC column with footing Shown in figure 3. *Note: Make suitable assumption as necessary.* 12M

UNIT-V

10. a) List components of a typical Tender Document and explain each in brief. 8M
    b) Explain any two Methods of valuation in brief? 4M

(OR)

11. a) Explain Administrative approval; Technical sanction 6M
    b) Explain Scrap value; Salvage value 6M

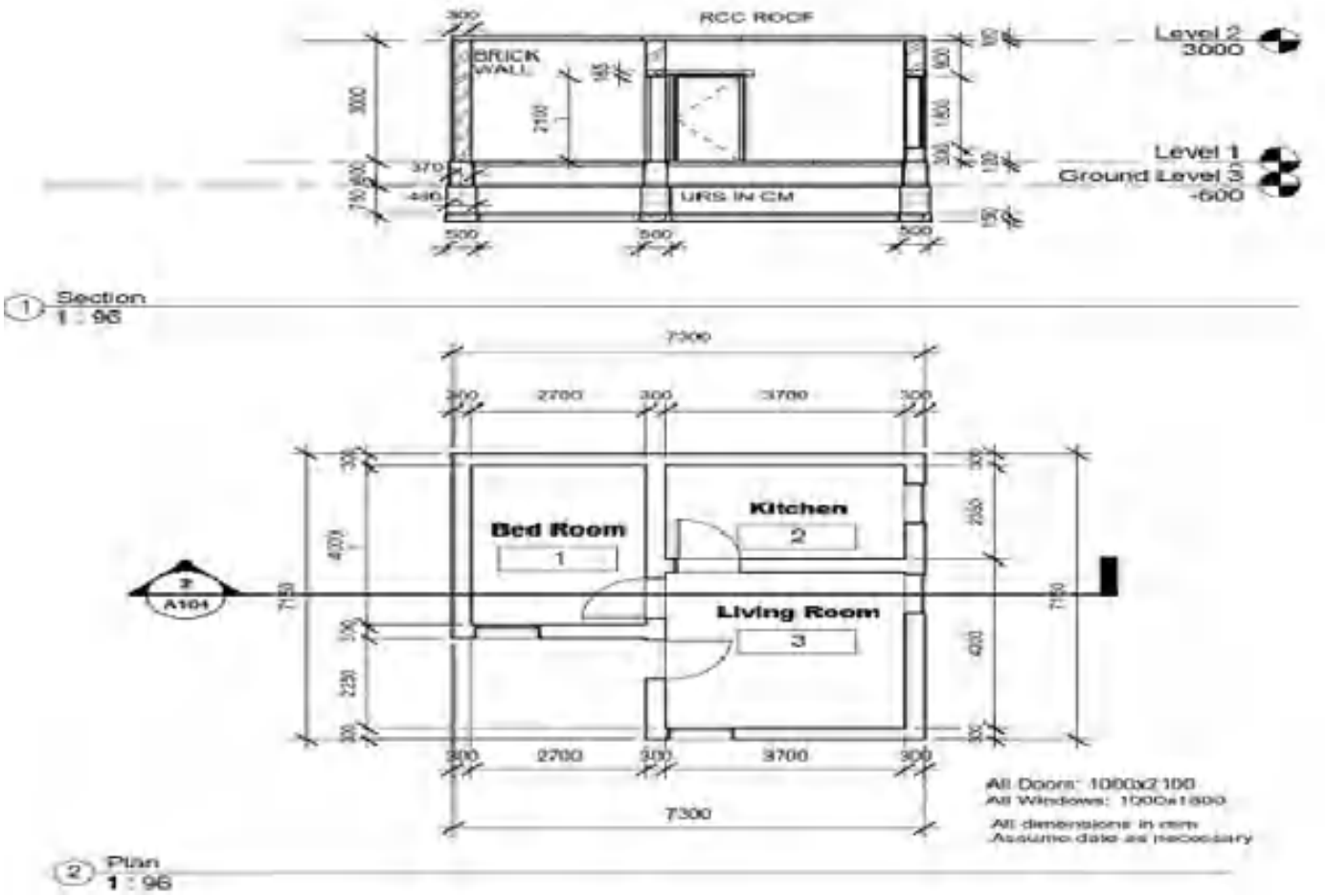


FIG 1

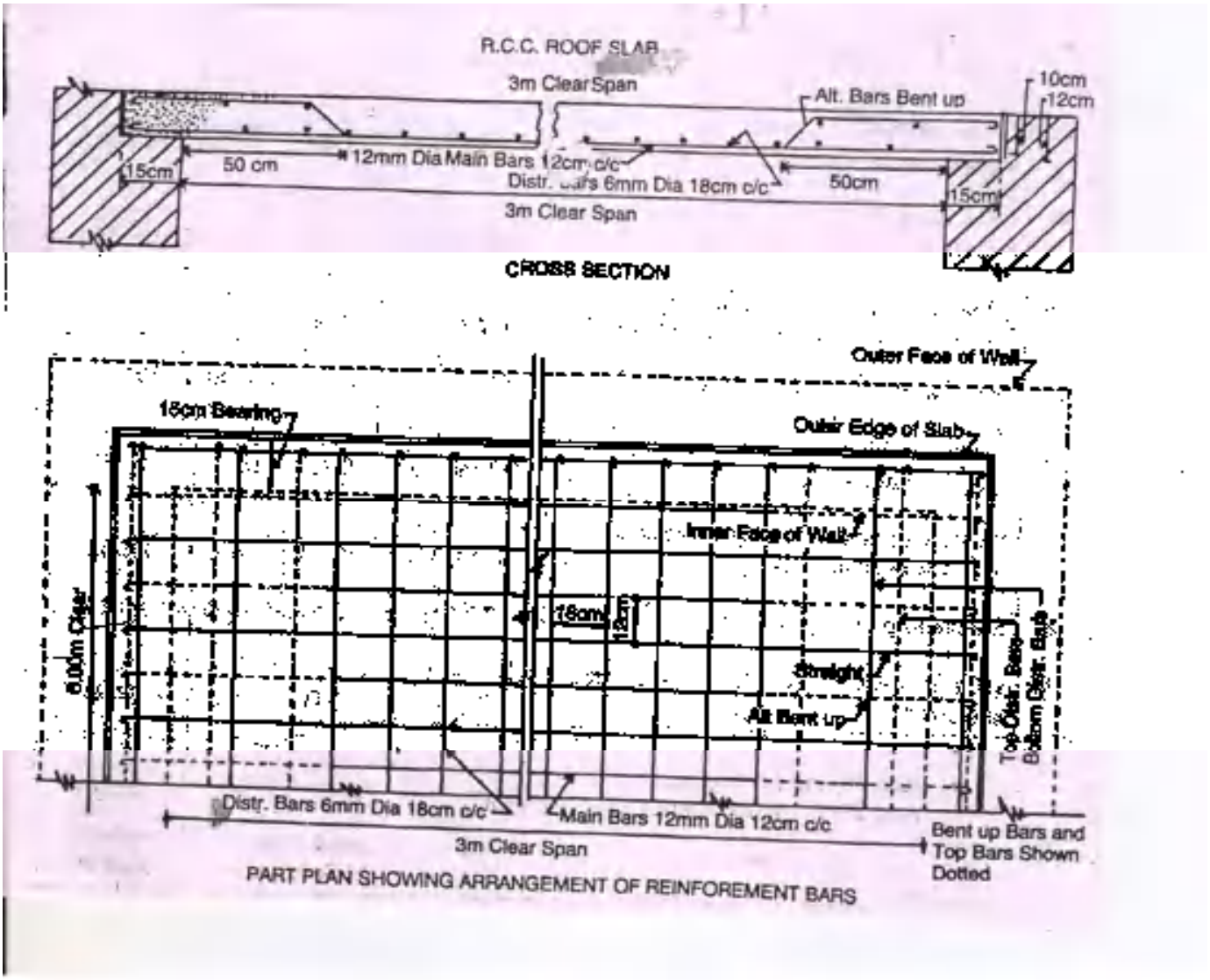

R.C.C. ROOF SLAB
3m Clear Span
Alt. Bars Bent up
10cm
12cm
15cm
50 cm
12mm Dia Main Bars 12cm c/c
Distr. Bars 6mm Dia 18cm c/c
50cm
15cm
3m Clear Span
CROSS SECTION
Outer Face of Wall
15cm Bearing
Outer Edge of Slab
Inner Face of Wall
6.00m Clear
18cm
12cm
Straight
Alt Bent up
Top Distr. Bars
Bottom Distr. Bars
Distr. Bars 6mm Dia 18cm c/c
Main Bars 12mm Dia 12cm c/c
3m Clear Span
Bent up Bars and Top Bars Shown Dotted
PART PLAN SHOWING ARRANGEMENT OF REINFOREMENT BARS

FIG 2

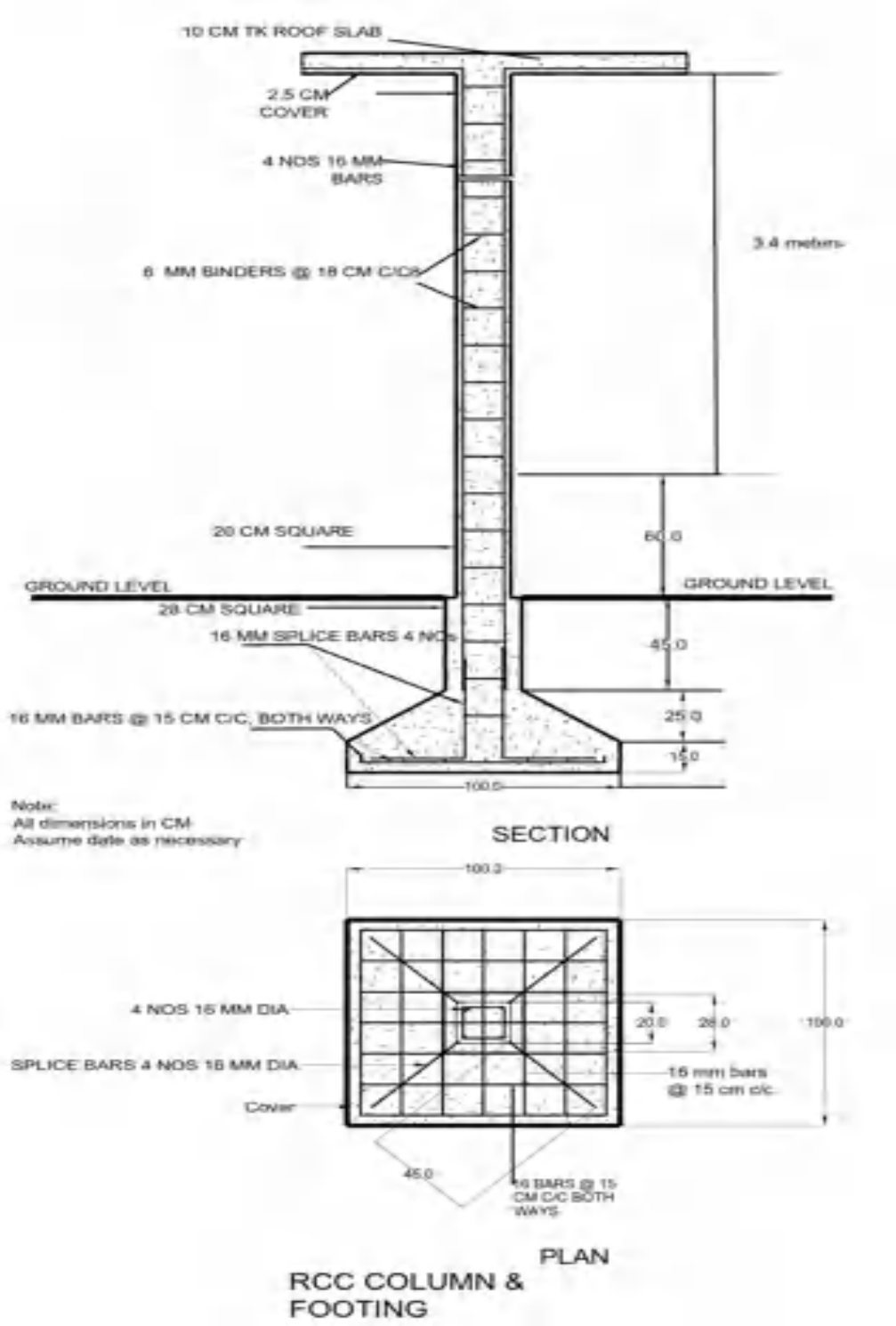

10 CM TK ROOF SLAB
2.5 CM COVER
4 NOS 16 MM BARS
6 MM BINDERS @ 18 CM C/CS
3.4 meters
20 CM SQUARE
60.0
GROUND LEVEL
GROUND LEVEL
28 CM SQUARE
16 MM SPLICE BARS 4 NOS
45.0
16 MM BARS @ 15 CM C/C, BOTH WAYS
25.0
15.0
100.0
Note:
All dimensions in CM
Assume data as necessary
SECTION
100.0
4 NOS 16 MM DIA
SPLICE BARS 4 NOS 16 MM DIA
Cover
20.0
28.0
100.0
16 mm bars
@ 15 cm c/c
45.0
16 BARS @ 15 CM C/C BOTH WAYS
PLAN
RCC COLUMN & FOOTING

FIG 3

AR13

CODE: 13EE4023 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2019

POWER SYSTEM ANALYSIS

(Electrical & Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

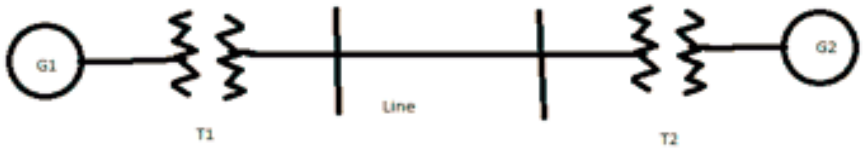
1. a) The p.u impedance of a single phase transformer on primary side is 0.4 p.u. What is its value on secondary side? Justify your answer.
   b) Describe Primitive network
   c) What is an acceleration factor?
   d) Why N-R method is more accurate than G-S method.
   e) A partial network consists of 'n' buses, If a branch is added between old bus and new bus what is the change in dimension Z_{bus} of a partial network
   f) Mention two objectives of short circuit analysis.
   g) Given sequence components of phase voltages: $V_{b1} = 100$, $V_{c2} = j10$ and $V_{a0} = 10$ Determine phase voltage V_b
   h) Draw the sequence network of a star connected generator operating under no load condition when suddenly L-G Fault occurs on its terminals (Its zero sequence impedance Zgo and the neutral is ground through an impedance Zn).
   i) Explain the concept of critical clearing angle
   j) Define steady state stability limit

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) The p.u. impedance value of an alternator corresponding to base values 13 kV and 30MVA is 0.4 p.u. Find p.u value for the base values of 13.8 kV and 50MVA. [4M]
   b) Choosing a common base of 100 MVA, compute the per unit impedance (reactance) of the components of the power system and draw the positive sequence impedance (reactance) diagram. [8M]



Generator 1 : 100 MVA, 11 kV, X" = 1.4 Ohm
Generator 2 : 50 MVA, 6.6 kV, X" = 1.2 Ohm
Transformer 1 : 10 MVA, 33/11 kV, X = 15.2 Ohm per phase on HT side
Transformer 2 : 10 MVA, 33/6.6 kV, X = 16.0 Ohm per phase on HT side
Transmission line : 22.5 Ohms per phase

(OR)

3. a) What is bus admittance matrix? And Explain its applications. [4M]

b) The parameters of a 4-bus system are as under: [8M]

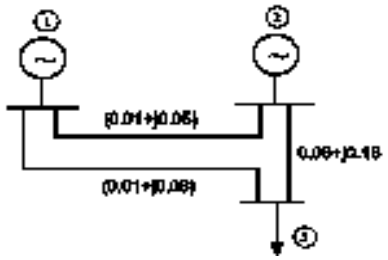
Bus code	**Line impedance(p.u)**	**Charging admittance**
1-2	0.2+j0.8	j0.02
2-3	0.3+j0.9	j0.03
2-4	0.25+j1.0	j0.04
3-4	0.2+j0.8	j0.02
1-3	0.1+j0.4	j0.01

Draw the network and find bus admittance matrix.

UNIT-II

4. a) Derive the power flow equation in polar form. [5M]

b) Perform one iteration of FDLF method for the system shower in figure. [7M]



Slack Bus-1: V = 1.05 +j 0.0. P - V Bus -2: |V2| = 1.03 p.u.: P2 = 0.5 p.u.; 0.1 < Q2>0.3. Load Bus -3: P3 = 0.6 p.u., Q3 = 0.25

(OR)

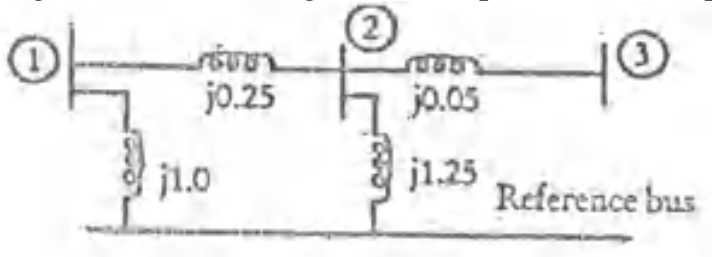
5. a) Write the advantages and disadvantages of Gauss-Seidel method and Newton-Raphson method [5M]

b) Draw the flow chart of FDLF method [7M]

UNIT-III

6. a) Derive expression for a partial network adding a link to form Z_{bus} [4M]

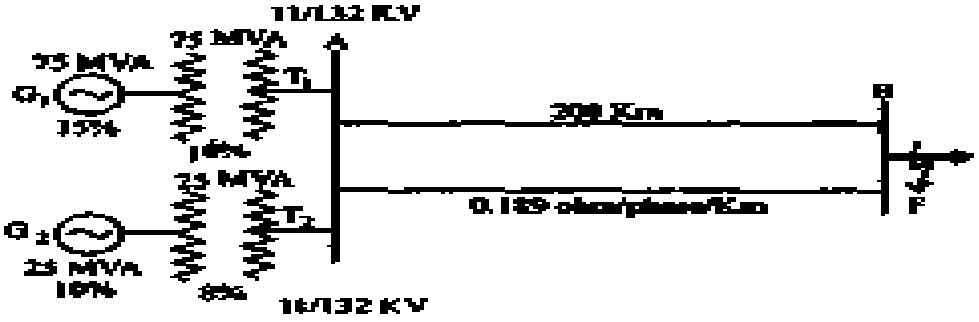
b) Find the bus impedance matrix for the system whose reactance diagram is shown in fig. All the impedances are in p.u. [8M]



(OR)

7. a) What are the basic assumptions made in fault calculations [4M]

b) R station with two generators feeds through transformers a transmission system operating at 132 KV. The far end of the transmission system consisting of 200 km long double circuit line is connected to load from bus B. If a 3-phase fault occurs at bus B, determine the total fault current and fault current supplied by each generator. Select 75 MVA and 11 kV on LV side and 132 kVon H.V side as base values. [8M]



UNIT-IV

8. a) Derive an expression for the fault current for a double-line fault as an unloaded generator. [5M]

b) A 30 MVA, 13.8Kv generator with neutral grounded through a 1-ohm resistance, has a three-phase fault MVA of 200MVA. Calculate the fault current and the terminal voltages for a single line-to- ground fault at one of the terminals of the generator. The negative and zero sequence reactance's of machine are 0.10pu and 0.05pu respectively. Neglect pre-fault current, and losses. Assume the pre-fault generated voltage at the rated value. The fault is of dead short-circuit type. [7M]

(OR)

9. a) Derive the sequence network for a double line to ground (LLG) Fault on terminals of no-loaded alternator and neutral point is solidly grounded [5M]

b) A 50 MVA, 11 KV, three phase alternator was subjected to different types of faults. The fault currents are; three phase fault 1870 A, line to line fault 2590 A, single line to ground fault 4130 A. the alternator neutral is solidly grounded. Find the p.u values of the three sequence reactance's of the alternator [7M]

UNIT-V

10. Derive the swing equation of a synchronous machine swinging against an infinite bus. Clearly state the assumption in deducing the Swing Equation [12M]

(OR)

11. Explain critical clearing time and critical clearing angle, deriving the expressions [12M]

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AR13

CODE: 13ME4027 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech **I** Semester Supplementary Examinations, January-2019

FINITE ELEMENT METHODS
(Mechanical Engineering)

Time :3Hours **Max Marks:70**

PART-A

ANSWER ALL QUESTIONS **[10x1=10M]**

1. a) What is meant by post processing in FEA?
   b) Give an example for plane stress problem.
   c) State principle of minimum potential energy
   d) What is meant by half band width in banded stiffness matrix?
   e) Write the shape functions of one dimensional quadratic element.
   f) Write down the difference between truss element and beam element from the point of view of degree of freedom and loading.
   g) Write the shape functions for constant strain triangle in terms of area coordinates.
   h) Write the one dimensional steady sate heat conduction equation
   i) What is the need of higher order elements in FEA?
   j) Write any two eigenvalue - eigenvector evaluation procedures

PART-B

Answer one question each from each unit **[5x12=60M]**

UNIT-I

2. a) Derive material matrix D relating stresses and strains under plane strain conditions for a linear elastic isotropic material with young's modulus E and Poisson's ratio υ. [7M]
   b) In a solid body six components of stresses at any point in terms of MPa is given by stress vector $\lfloor \sigma_x \quad \sigma_y \quad \sigma_z \quad \tau_{xy} \quad \tau_{yz} \quad \tau_{xz} \rfloor = [40 \quad 30 \quad 20 \quad 10 \quad -30 \quad 15]$ determine normal stress at a point on a plane for which the normal is $(n_x \quad n_y \quad n_z) = (1/2 \quad 1/2 \quad 1/\sqrt{2})$ [5M]

(OR)

3. a) Explain basic steps of Finite Element method in detail [6M]
   b) A rod fixed at its ends is subject to a varying body force as shown in the Figure-1. Use Rayleigh–Ritz method with the assumed displacement field $u = a_0 + a_1 x + a_2 x^2$, to find the displacement $u(x)$ and stress $\sigma(x)$. [6M]

UNIT-II

4. a) Derive shape functions for one dimensional quadratic element. [7M]
   b) Consider a 1D bar element whose cross sectional area of bar is 774.2mm^2 and Young's modulus is 200GPa.If the displacements at starting node (node1) q_1 and ending node (node2) q_2 are 0.508mm and 0.0635mm respectively. Length of element is 203.2mm. Find the displacement at point P which is at a distance 127mm from node1. [5M]

(OR)

5. For a composite bar shown in the Figure-3, by considering Young's modulus of Steel and Aluminum are 250MPa and 70GPa and cross-sectional area of Steel and Aluminum rods are $0.02m^2$ and $0.01m^2$ respectively.
   i) Find the displacements at nodes 2 and 3 when F_2=10kN. [7M]
   ii) Also find the displacements at node 2 and 3 for the composite bar shown in the figure When F_2=10kN and displacement at node 4 is 2mm. [5M]

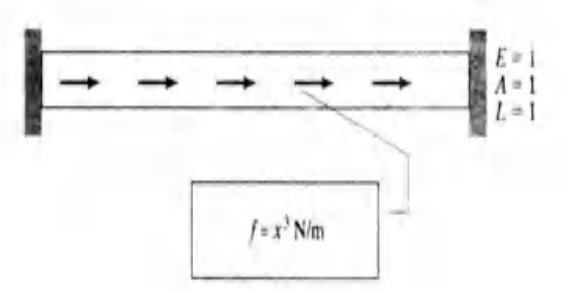

Figure-1

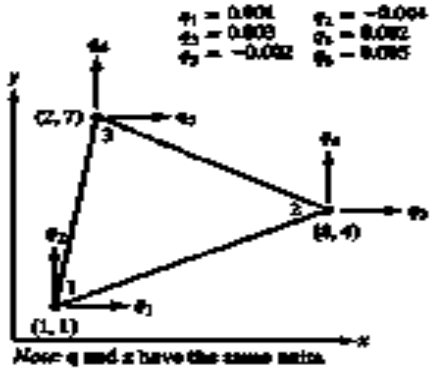

Figure-2

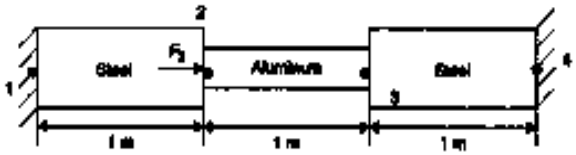

Figure-3

UNIT-III

6. a) Derive the expression for element stiffness matrix for truss element by obtaining transformation matrix relating global and local displacement fields. [8M]
   b) Obtain B matrix for truss element which relates strains and displacements, in global coordinate system and explain how to calculate stresses and strains. [4M]

(OR)

7. For the triangular element shown in the Figure-2 obtain strain-displacement matrix (B) and determine $\varepsilon_x, \varepsilon_y$ & γ_{xy} and also calculate stresses induced under plane stress and plane strain conditions. Take E=200GPa and $\upsilon = 0.3$ [12M]

UNIT-IV

8. Consider a Cantilever beam having uniformly distributed load of 2kN/m through out its span of 2m and having point load of 4kN at the middle span. Calculate displacement fields at free end and at the mid-span. [12M]

(OR)

9. Evaluate the following integral by one point and two point Gauss Quadrature.

$$I = \int_{-1}^{1} \left[3e^x + x^2 + \frac{1}{(x+2)} \right] dx$$ [12M]

UNIT-V

10. a) What are the properties of Eigen vectors [4M]
    b) Write the procedure of finding Eigen values, Eigen Vectors and mode shapes using characteristic polynomial technique for damped free vibrations. [8M]

(OR)

11. Derive the expression thermal conductivity matrix and internal heat generation matrix for one dimensional steady state heat conduction element using Galerkin's approach. [12M]

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AR13

CODE: 13EC4028 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2019

RADAR ENGINEERING

(Electronics & Communication Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Define the term Cross-Range Resolution of Radar?
   b) Define radar range.
   c) What is Minimum detectable Signal?
   d) Mention different types of Basic Radars?
   e) Mention any two applications of Master Oscillator Power Amplifier.
   f) What is the importance of Multiple (Staggered) PRFs in radars?
   g) Define Blind speed?
   h) Mention different types of MTI Radar?
   i) Define Noise Figure?
   j) Write the main function of automatic gain control (AGC)?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Modify the range equation for an antenna with a transmitting gain G and operating at a wavelength — 7M
   b) Explain system losses will effect on the radar range? — 5M

(OR)

3. a) Estimate the radar cross-section of a spherical target if the wavelength of transmitting signal with reference to the target size is in Rayleigh region. — 6M
   b) Explain briefly about PRF and range ambiguities in radar systems — 6M

UNIT-II

4. a) With the help of a suitable block diagram, explain the operation of a CW radar with non-zero IF in the receiver. — 8M
   b) Calculate the Doppler frequency seen by stationary Radar when the target radial velocity is 100km/hr and With a transmit (CW) frequency of 5GHz? — 4M

(OR)

5.	a)	Draw the block diagram of IF Doppler bank and explain the operation of it with the help of frequency response of it.	8M
	b)	Explain different applications of CW Doppler Radar.	4M

UNIT-III

6.	a)	Compare and contrast the situations with a power amplifier and a power oscillator in the transmitter of an MTI system	8M
	b)	Explore the possibility of broadening the clutter rejection null using a second delay line canceller in the MTI radar system	4M

(OR)

7.	a)	Write a brief notes on Limiting in MTI Radar.	6M
	b)	Explain the function of time domain filter with an example	6M

UNIT-IV

8.	a)	Describe automatic tracking of a target through range gating technique	6M
	b)	Why does a tracking radar have poor accuracy at low elevation angles? Explain	6M

(OR)

9.	a)	Explain the block diagram of amplitude comparison mono pulse for extracting error signals in both elevation and azimuth.	8M
	b)	Explain low angle tracking	4M

UNIT-V

10.	a)	Explain the block diagram of the AGC portion of tracking radar receiver.	6M
	b)	Derive the impulse response of a matched filter that is commonly used in a radar system	6M

(OR)

11.	a)	Write a brief notes on Radar Displays	6M
	b)	Write short notes on Phased Array Antennas	6M

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AR13

CODE: 13CS4021 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMNET, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Supplementary Examinations, January-2019

MOBILE COMPUTING
(Common to CSE & IT)

Time:3 hours **MaxMarks:70**

PART-A

ANSWER ALL QUESTIONS **[1X10=10M]**

1.a) What is modulation?
b) Define wireless communication?
c) What is reverse Tunneling?
d) Explain HLR?
e) What are two different kinds of mobility
f) What is MANET??
g) Define routing.
h) Define snooping TCP?
i) What is selective retransmission?
j) Define Handover.

PART-B

Answer one question from each unit **[5X12=60M]**

UNIT-I

2. Explain mobile computing architecture with neat diagram. **[12M]**

(OR)

3. (a) Difference between Guided transmission and Unguided transmission **[6M]**
(b) Describe the limitations of mobile computing **[6M]**

UNIT-II

4. Explain the terms and functionalities of GSM architecture with neat sketch. **[12M]**

(OR)

5 (a) Differentiate mobile originated call (MOC) from mobile terminated call (MTC)? **[5M]**
(b) Discuss briefly about call handling in GSM **[7M]**

UNIT- III

6. (a) Explain MAC in detail. **[7M]**
(b) Explain ALOHA ? **[5M]**

(OR)

7. (a) Explain CDMA 2000 3G communication standards. **[6M]**
(b) Write any five differences between 3G and 4G standards. **[6M]**

UNIT IV

8. (a) Describe packet delivery system in Mobile IP. . **[6M]**
(b) Discuss in detail about DHCP**.** **[6M]**

(OR)

9. Describe the working of Mobile IP and explain it features. [**12M]**

UNIT- V

10. Explain any three routing algorithms. **[12M]**

(OR)

11(a) Explain Snooping TCP and Mobile TCP. **[6M]**
(b) Explain spectrum of MANET Applications. **[6M]**

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