AR13

CODE : 13CE4025 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMEN,TEKKALI

(ATONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2018

ESTMATION AND QUANTITY SURVEYING

(Civil Engineering)

Time: 3 hours **Max.Marks :70**

Assume Necessary Data

PART-A

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

1. a) Define Detailed estimate
   b) Write the units of measurement of steel reinforcement bars in concrete
   c) What is meant by rate analysis
   d) What is the purpose abstract of estimated cost
   e) What is security money
   f) Define 'Contract'
   g) What is valuation
   h) List out types of contracts
   i) What do you meant by 'sinking fund'
   j) Define 'Net income' of a property

PART-B

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

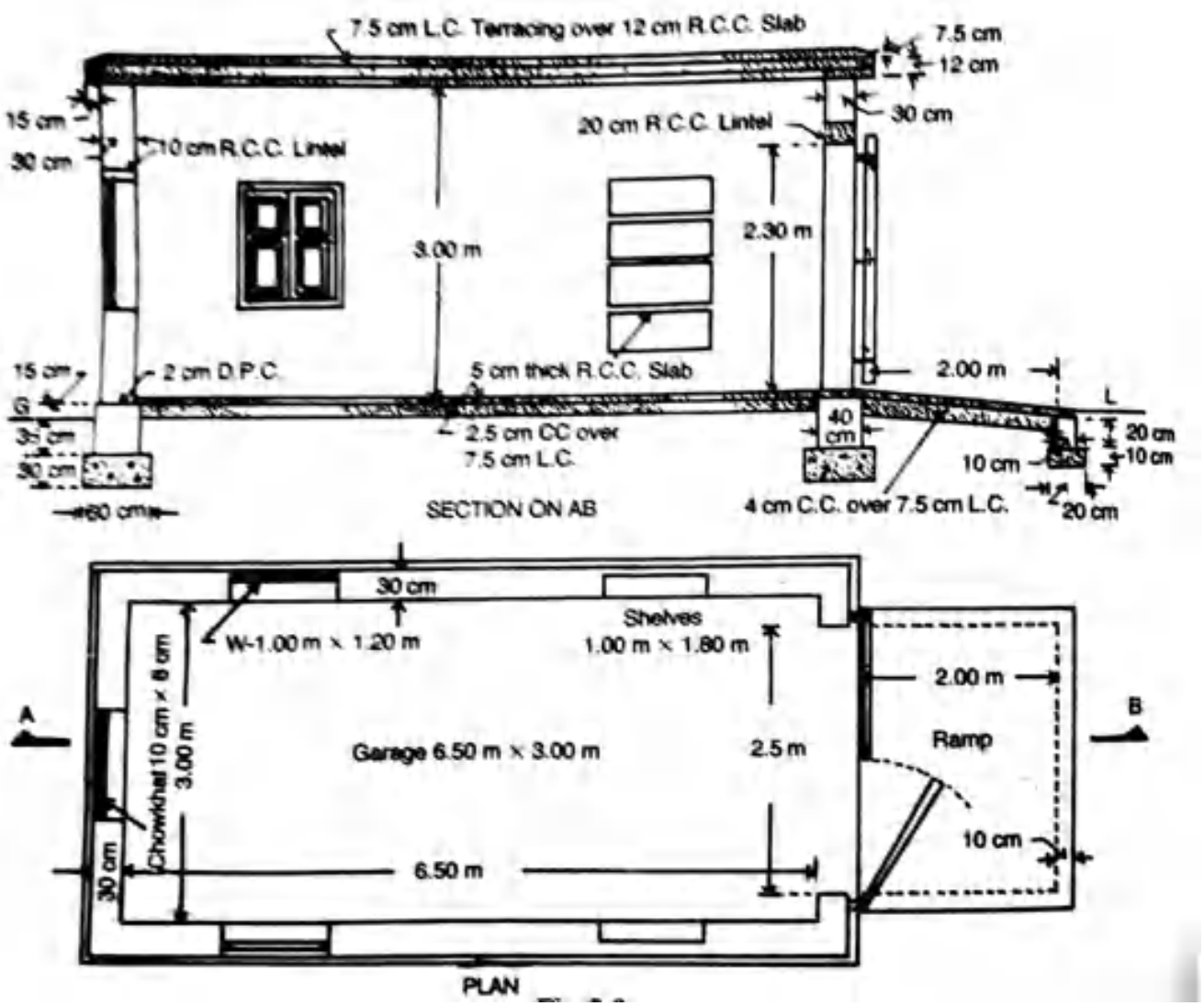
UNIT-I

2. The plan and section of a Garage building given in fig.(1). Estimate the following items

   i. Plastering of wall(1:5)
   ii. Rcc slab (1:1.5:3)
   iii. Footings with brick work(1:5)
   iv. Anti skid tiled Flooring of the building

(OR)

3. The plan and section of Garage building given in fig.(1). Estimate the following items **.. (Fig-1)**



i. Earth work excavation
ii. Cement concrete (1:1.5:3)for footings
iii. Soil filling in basement
iv. Brick work (1:6) in superstructure wall

UNIT-II

4. The formation width of a road embankment is 10.00 m.The side slopes on both sides are 1.5:1 . The depths along centre line of road at 50.00 m intervals are 1.4,1.1,1.3,.6,1.2 and 1.0 meter. It is required to calculate the quantity of earth work by
(i) Prismoidal rule (ii) Mean sectional area method

(OR)

5. The bed width of a canal is 5 metre and the top widths of banks are 3 metre for the left and 1.5 metre for the right bank. Side slopes of excavation of canal is 1:1 and of banks 1.5:1on both sides. Height of bank from bed is 2.55 metre throughout. The longitudinal slope of the bed is 1 in 5000 . Estimate the earth work of the canal both in cutting and banking. (assume any missing data suitably)

Chain age	500	550	600	650	700	750	800
R.L of the ground	100.00	100.31	100.52	100.57	99.68	99.21	99.34

UNIT-III

6. Describe the rate analysis procedure for the calculation of rate per unit of one cubic meter of the following item
   i) Concrete flooring (1:2:4) with 40 mm stone ballast

(OR)

7. Describe the rate analysis procedure for the calculation of rate per unit of one cubic meter of the following item
   i) RCC Slab (1;1.5:3) with 20 mm aggregate

UNIT-IV

8. Calculate quantity of steel for R.C.C footings, Columns and Plinth beam by bar bending schedule . Data given below.
   - Size of footing : 2 m x 2 m
   - Dia , & spacing of the bars for footing are12mm & 110 mm c/c.
   - No of footings are 4 no.
   - Size of the column : 0.35 m x 0.35 m,
   - Dia of main bars and number of bars in columns are 16 mm, 6 number for each column,
   - Column stirrups dia 8 mm and spacing of stirrups is 300 mm c/c .
   - Size of the plinth beam is 0.350 m x 0.350 m,
   - Length of the plinth beam is 30 meters,
   - Dia of main bars in plinth beam are 12 mm, bottom 3 numbers and top 2 numbers , - Dia of stirrups and spacing of stirrups in plinth beam are 8 mm and 300 mm c/c.

(OR)

9. Calculate quantity of steel for R.C.C footings, Lintels and Slab beam by bar bending schedule . Data given below.
   - Size of footing : 1.5 m x 1.5 m
   - Dia , & spacing of the bars for footing are12mm & 110 mm c/c.
   - No of footings are 8 no.
   - Size of the Lintel : 0.225 m x 0.350 m,
   - Length of lintel : 1.0 meter
   - Dia of main bars and number of bars in Lintel : 12mm , bottom 3 numbers and top 2 numbers
   - stirrups dia 8 mm and spacing of stirrups is 300 mm c/c .
   - Size of the slab beam is 0.350 m x 0.350 m,
   - Length of the slab beam is 20 meters,
   - Dia of main bars in slab beam are 12 mm, bottom 3 numbers and top 2 numbers , - Dia of stirrups and spacing of stirrups in plinth beam are 8 mm and 300 mm c/c.

UNIT-V

10. Explain in detail the following
    a) Different methods of Valuation
    b) Different methods of depreciation

(OR)

11. Explain in detail the following
    a)write the procedure adopted for valuation of building based on Rent
    b) write the procedure adopted for valuation of building based on profit.

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AR13

CODE: 13EE4023 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2018

POWER SYSTEM ANALYSIS

(Electrical & Electronics Engineering)

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

PART-A

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

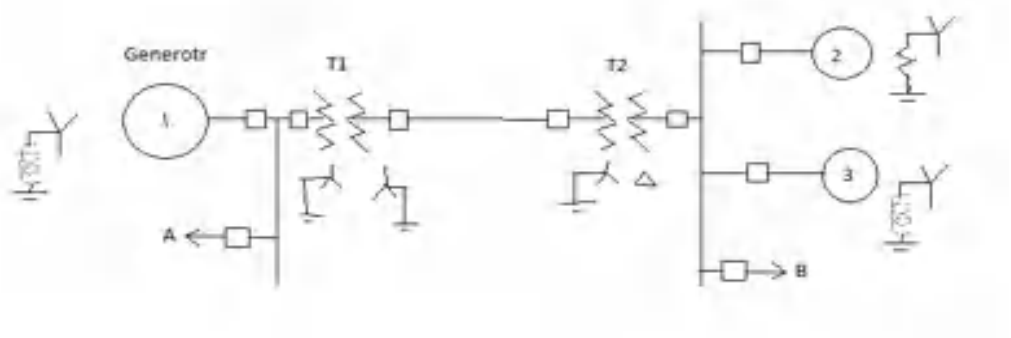
1. a) Explain the advantages of Per Unit system?
   b) What is the difference between element-node incidence matrix and bus-incidence matrix?
   c) What is meant by flat voltage start.
   d) Discuss the approximations made in the FDLF method
   e) Z_{bus} of a partial network has dimensions of 3× 3. How does it dimensions change when i) Branch is added (ii) Link is added
   f) Distinguish between symmetrical and unsymmetrical short circuits.
   g) Express the phase voltages in terms of sequence components with a phase sequence of ABC
   h) Draw the zero sequence network of a star connected generator with zero sequence impedance Zgo when the neutral is ground through an impedance Zn.
   i) State equal area criterion
   j) Define critical clearing time and critical clearing angle

PART-B

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

UNIT-I

2. a) Enumerate the steps to draw a Per Unit Impedance Diagram of a Power System. [4M]
   b) Obtain PU reactance diagram using the generator rating as base value. [8M]

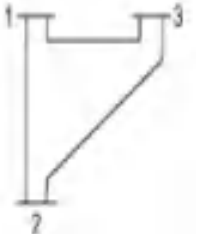


Generator No. 1: 60 MVA, 10.5kV, X" =1.4 ohms
Generator No. 2: 30 MVA, 6.6kV, X" =1.6 ohms
Generator No. 3: 50 MVA, 6.6kV, X" =0.56 ohms
Transformer T1 (3phase): 30 MVA, 11/33kV, X=15.2 ohms per phase on HT side
Transformer T2 (3phase): 30 MVA, 33/6.2 kV, X=16 ohms per phase on HT side
Transmission line: 20 ohm/phase.

(OR)

3. a) Show how bus admittance matrix can be derived using primitive admittance matrix and incidence matrix. [5M]
   b) Find out the Y bus matrix of the sample power system as shown in fig. Data for this system is given in table. And draw its equivalent network [7M]

Bus code i-k	Impedance Z_{ik}	Line charging $y'_{ik/2}$
1-2	0.02 + j0.06	j0.03
1-3	0.08 + j0.24	j0.025
2-3	0.06 + j0.18	j0.020



UNIT-II

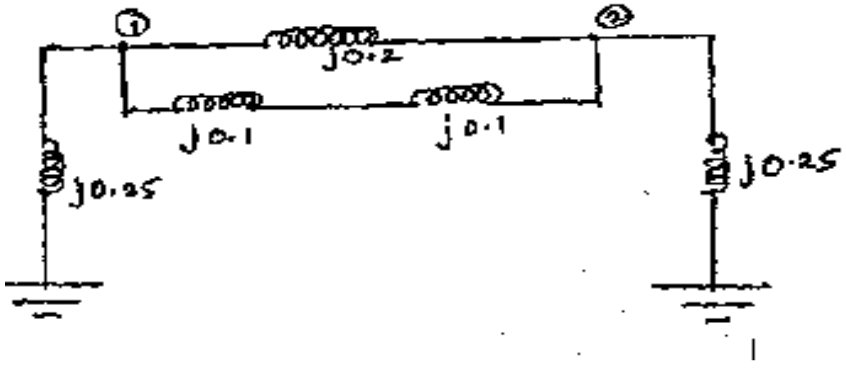
4. a) Discuss the Various types of buses and its significance. [5M]
   b) Derive load flow algorithm using Gauss – Seidal method with flow chart. [7M]

(OR)

5. a) Derive static load equations for 'n' bus system in rectangular method. [4M]
   b) Draw the flowcharts of load flow solution using N-R method and explain advantages of N-R method. [8M]

UNIT-III

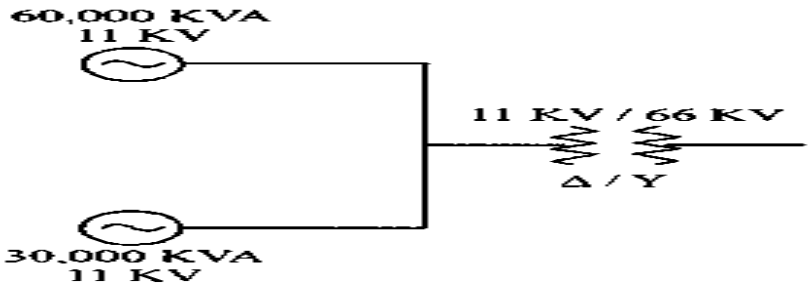
6. a) Explain the step by step procedure for systematic fault analysis using bus impedance matrix [4M]
   b) Find the bus impedance matrix for the system whose reactance diagram is shown in fig. All the impedances are in p.u. [8M]



(OR)

7. a) Explain the importance of symmetrical fault analysis in power systems. [4M]

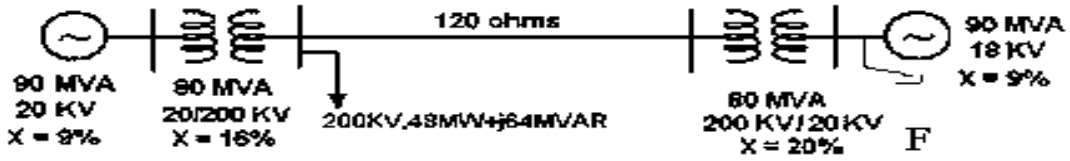
b) Two generators are connected in parallel to the I.v. side of a 3-phase delta-star transformer as shown in Fig. E.6.6. Generator 1 is rated 60,000 KVA, 11 KV. Generator 2 is rated 30,000 KVA, 11 KV. Each generator has a sub transient reactance of (xd") = 25%. The transformer is rated 90,000 KVA at 11 KV Delta / 66 KV Star with a reactance of 10%. Before a fault occurred the voltage on the h.t. side of the transformer is 63 KV. The transformer in unloaded and there is no circulating current between the generators. Find the sub transient current in each generator when a 3-phase short circuit occurs on the h.t. side of the transformer. [8M]



UNIT-IV

8. a) Derive an expression for fault current for a Line-Ground fault on No-Loaded Alternator 5M

b) Draw the sequence network for the system shown in figure when LLG at F . Choose Base MVA as 100 MVA and Base KV as 20 KV. 7M



(OR)

9. a) Draw the Zero sequence networks for the following Transformers. 4M
i) Isolated star/ Star connected with neutral point is Solidly grounded T/F
ii) Delta/Star connected with Neutral point is reactively grounded

b) A 30 MVA, 11 KV generator has Z1 = Z2 = j0.2 p.u, Z0 = j0.05 p.u. A line to ground fault occurs on the generator terminals. Find the fault current and line to line voltages during fault conditions. Assume that the generator neutral is solidly grounded and that the generator is operating at no-load and at rated voltage at the occurrence of fault. 8M

UNIT-V

10. a) Distinguish between steady state, transient and dynamic stability. 5M

b) Explain the methods of improving power system stability. 7M

(OR)

11. Describe the equal area criterion for transient stability analysis of a system. 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-2018

FINITE ELEMENT METHODS

(Mechanical Engineering)

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

PART-A

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

1. a) Describe the principle of minimum potential energy
   b) Explain the term discretization related to finite element method
   c) State the assumptions made in case of a Truss element
   d) What are the characteristics of a Shape function
   e) Why polynomial type of interpolation functions are often used in FEM
   f) Name the weighted residual methods for FEA
   g) Write the stiffness matrix of a 1D bar element
   h) State the number of degrees of freedom for a CST element
   i) What is meant by isoparametric element
   j) Name any four FEA software

PART-B

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

UNIT-I

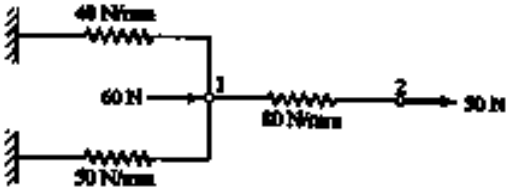
2. If a displacement field is described by $u=(-x^2+2y^2+6xy)10^{-4}$ and $v=(3x+6y-y^2)10^{-4}$, determine ϵ_x, ϵ_y, γ_{xy} 6M

   b A long rod is subjected to loading and a temperature increase of 30^0C. The total strain at a point is measured to be $1.2X10^{-5}$. If E=200 GPa, $\alpha=12X10^{-6}/^0$C, determine the stress at the point. 6M

(OR)

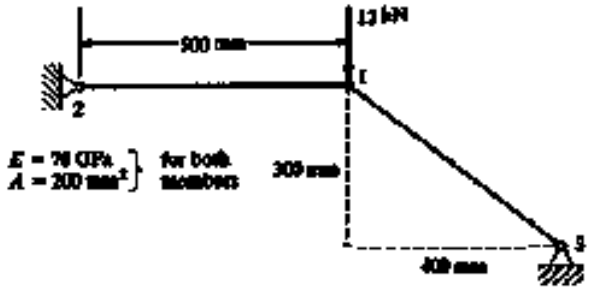
3. a. Derive an equation to find the solution of elasticity problems using Galerkin's approach. 6M

   b. Determine the displacements of nodes of the spring system shown below. 6M



UNIT-II

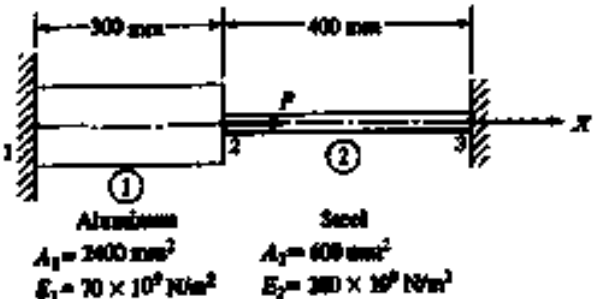
4. a. Describe the properties of a Global stiffness matrix 4M
   b. Determine the displacements of node 1 and the stress in 8M



element 1-3 of the two bar truss shown in the figure below.

(OR)

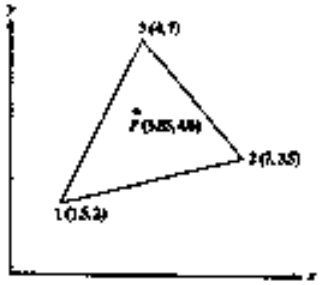
5. In the bar shown below, the axial load P is given as $200X10^3$ 12M



N. Using penalty approach for handling boundary conditions (i) Determine the nodal displacements, (ii) Determine the stress in each material, (iii) Determine the reaction forces.

UNIT-III

6. a. 6M



Evaluate the shape functions N_1, N_2, N_3 at the interior point P for the triangular element shown below.

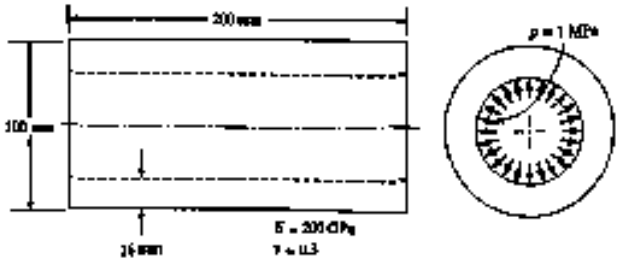
b. The stress–displacement matrix (DB) of a two dimensional 6M

$$DB = \begin{bmatrix} 2500 & 2200 & -1500 & 1200 & -4400 & 1000 \\ 3500 & 4000 & 4100 & 2600 & -1500 & 1200 \\ 2000 & 2500 & -4000 & 1800 & 2200 & 4400 \end{bmatrix} N/mm^2$$

triangular element appearing in σ =DBq is shown by the following matrix. If the coefficient of linear expansion is $10^{-5}/^0C$, the temperature rise of the element is 100^0C, and the volume of the element is 25 mm^3, determine the equivalent temperature load for the element.

(OR)

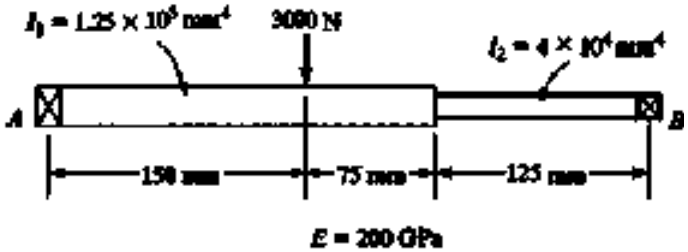
7. The open ended steel cylinder subjected to an internal pressure of 1MPa is shown in the figure below. Find the 12M



deformed shape and distribution of principal stresses.

UNIT-IV

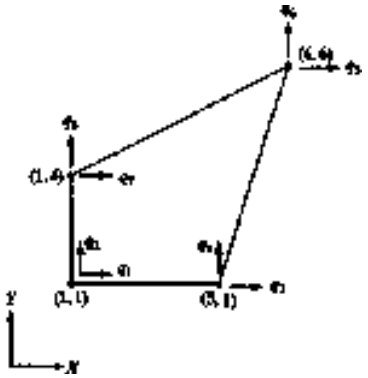
8. Find the deflection at the load and the slopes at the ends for the steel shaft shown in the figure below. Assume that the 12M



shaft is simply supported at bearings **A** and **B.**

(OR)

9. a. A four-node quadrilateral element is showed in the figure below. The element displacement vector q = [0, 0, 0.20, 0, 0.15, 0.10, 0, 0.05]^T. Find the following: (i) The x, y coordinates of a point P whose location in the master element is given by ζ =0.5 and η =0.5 (ii) the u, v displacements of the point P. 7M

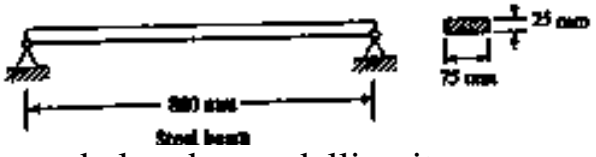


b. $\int_A \int (x^2 + xy^2)\,dx\,dy$ 5M

Using the 2X2 rule, evaluate the following integral by Gaussian quadrature. A denotes the region shown in problem 9(a).

UNIT-V

10. Determine natural frequencies of the simply supported beam shown in the figure below by modelling it as a one element. 12M



(OR)

11. a. Explain the one dimensional steady state heat transfer analysis of a composite slab. 5M

b. Illustrate the different steps followed during analysis of a beam structure during the pre-processing stage using Ansys. 7M

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AR13

CODE: 13EC4028 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2018

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 PRF?
   b) Define maximum unambiguous range?
   c) Define Doppler effect in terms of Radar?
   d) Mention any two disadvantages of CW Doppler Radar?
   e) Define Blind speed?
   f) Define squint angle?
   g) Mention the limitations to tracking accuracy?
   h) Explain the term "track while scan" (TWS) radar?
   i) Define Inter clutter Visibility?
   j) Define Range Resolution (RS)?

PART-B

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

UNIT-I

2. a) What are the different range frequencies that radar can operate and give their applications? 6M
   b) Derive fundamental radar range equation governed by minimum receivable echo power S_{min} 6M

(OR)

3. a) With the help of a suitable block diagram explain the operation of a pulse radar 7M
   b) What are the peak power and duty cycle of a radar whose average transmitter power is 200W, pulse width of 1μs and a pulse repetition frequency of 1000Hz? 5M

UNIT-II

4.	a)	With the help of a suitable block diagram, explain the operation of CW Doppler radar in a sideband super heterodyne receiver	8M
	b)	Calculate the Doppler frequency of stationary CW radar transmitting at 5 GHz frequency when a moving target approaches the radar with a radial velocity of 100 Km/Hour	4M

(OR)

5.	a)	Explain how isolation between transmitter and receiver of a radar system can be achieved if single antenna is used for transmission and reception.	7M
	b)	For an ambiguous range of 81 nautical miles (1nmi=1852 meters) in a two frequency CW Radar. Determine f2 and Δf when f1=4.2 kHz.	5M

UNIT-III

6.	a)	What is a delay line canceller? Illustrate the concept of blind speeds based on the frequency response of a single delay line canceller	7M
	b)	Explain different advantages and disadvantages of MOPA (Master Oscillator Power Amplifier)?	5M

(OR)

7.	a)	Discuss the factors limiting the performance of an MTI system	6M
	b)	Explain the operation of Non – coherent MTI radar, with neat diagram?	6M

UNIT-IV

8.	a)	Describe the phase comparison mono pulse tracking technique in a radar system with the help of necessary block diagram.	7M
	b)	List the merits and demerits of mono pulse tracker over conical scan type tracker	5M

(OR)

9.	a)	With the help of a suitable block diagram, Sequential lobing type of tracking technique in a tracking radar system	6M
	b)	Describe the process of acquiring a moving target prior to tracking it along with the patterns used for acquisition.	6M

UNIT-V

10.	a)	Explain how a circulator can be utilized for a radar receiver protection	6M
	b)	Discuss the efficiency of non-matched filters	6M

(OR)

11.	a)	Define noise figure and noise temperature of a receiver system	6M
	b)	Write a brief notes on Circulator and receiver protector	6M

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AR13

CODE: 13CS4021 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMNET, TEKKALI
(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, January-2018
MOBILE COMPUTING
(Common to CSE & IT)

Time:3 hours **MaxMarks:70**

PART-A

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

1.a) Define device mobility
b) Differentiate between Traditional IP and Mobile IP?
c) Define Tunneling?
d) Define Call Routing?
e) What is handover?
f) List the applications of MANETs?
g) Define routing
h) Define snooping TCP?
i) What is meant by data communication?
j) Differentiate between Foreign Agent and Home Agent

PART-B

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

UNIT-I

2. (a) Define mobile computing. list and explain the applications of mobile computing? **[7M]**
(b) Describe the limitations of mobile computing. **[5M]**

(OR)

3. (a) Difference between Guided transmission and Unguided transmission **[5M]**
(b) Explain in detail about mobile system networks? **[7M]**

UNIT-II

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

(OR)

5 (a) Differentiate mobile originated call (MOC) from mobile terminated call (MTC)? **[4M]**
(b) Write short notes on handover? **[8M]**

UNIT- III

6. (a) Describe in detail about CDMA2000 with suitable example **[8M]**
(b) Explain the features of 4G networks? **[4M]**

(OR)

7. (a) Explain WCDMA 3G communication standards **[6M]**
(b) Compare characteristic features of CDMA and GSM **[6M]**

UNIT IV

8. (a) Describe in detail about agent discovery and registration. **[6M]**
(b) Discuss in detail about generic routing encapsulation in mobile IP**.** **[6M]**

(OR)

9. Briefly discuss about packet delivery in mobile IP network layer with neat sketch. [**12M]**

UNIT- V

10. (a) Explain the following : snooping TCP and indirect TCP ? **[8M]**
(b) Describe security problems in MANET **[4M]**

(OR)

11(a) Describe transaction oriented TCP. **[6M]**
(b) Explain in detail AODV routing algorithm for MANETS. **[6M]**

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