

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

**IV B.Tech I Semester Regular Examinations, November-2016**

**ESTIMATION AND QUANTITY SURVEY**

**(CIVIL ENGINEERING)**

**Time: 3 Hours**

**Max Marks: 70**

**PART-A**

**Answer all questions**

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

1.
  - a) What is the significance of estimating and how does it affects the construction?
  - b) What do you mean by Lead Statement?
  - c) What is centerline method?
  - d) What are the methods to calculate the quantity of earth work?
  - e) List out types of earthwork in for roads?
  - f) List out types of specifications?
  - g) Define EPC.
  - h) Write about purpose of cover blocks?
  - i) Differentiate Price and Value?
  - j) Deference between estimation and valuation?

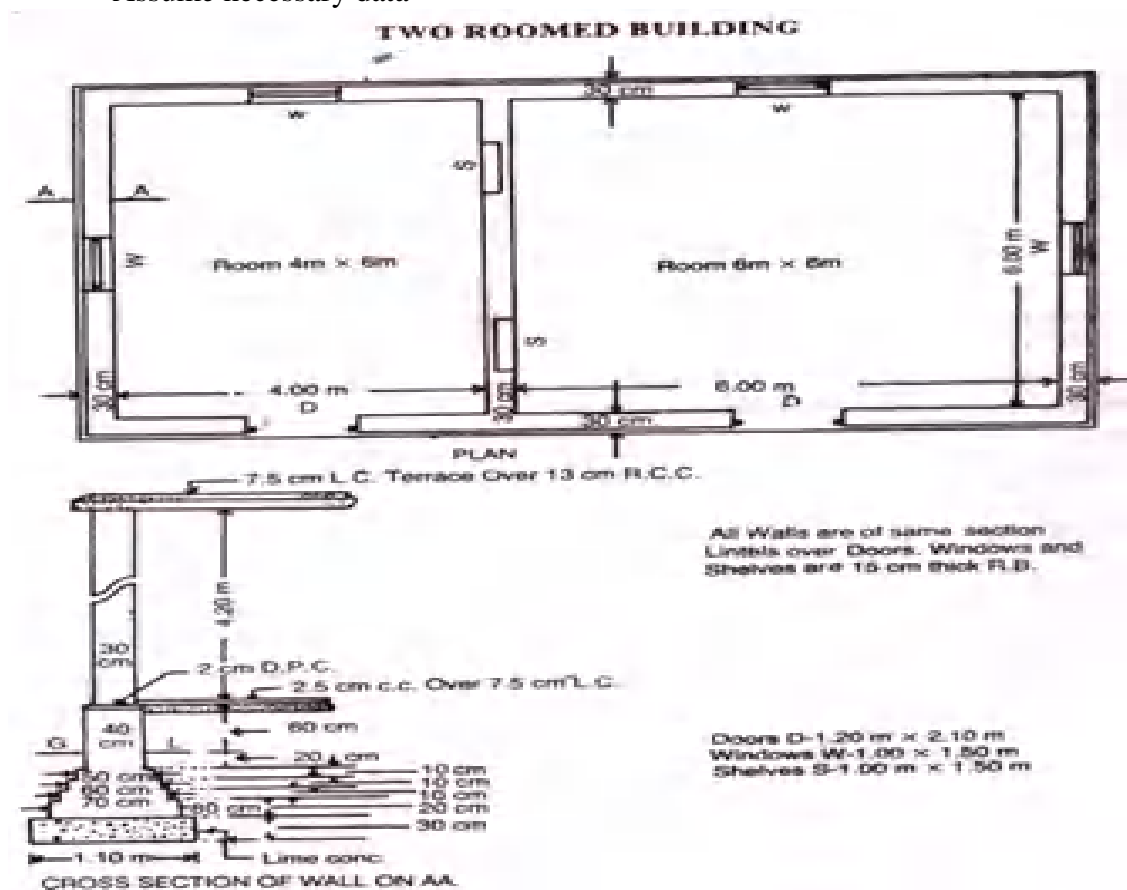
**Answer one question from each Unit**

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

**UNIT-I**

2. Figure-1 shows two roomed building as shown Estimate the following items.

- a) Earth work excavation in foundation
  - b) R.c.c. Plinth Beam
  - c) Brick masonry.
  - d) Earth filling in the basement
- Assume necessary data



**Fig-1**

**(OR)**

3.
  - a) Distinguish between detailed specifications and general specifications with example.
  - b) Write detailed specifications for centering & shuttering and R.C.C.

## UNIT-II

- 4 The formation width of a road embankment is 9.0m. The side slopes are 2.5:1. The depths along the center line of road at 50.0m intervals are 1.2,1.1,1.4,1.2,0.9,1.5 and1.0 m. It is required to calculate the quantity of earthwork by
- (i) Prismoidal rule.                      (ii) Mean sectional Area Method

**(OR)**

- 5 Reduced level of ground along the centre line of a proposed road from chainage 20 to chainage 28 are given below. The Formation level at 20<sup>th</sup> chainage is 108 m. The road is in downward gradient of 1 in 150 up to the chainage 23 and then the gradient changes to 1 in 100 downward till 28<sup>th</sup> chainage. Formation width of road is 10 m. Side slopes of banking are 2: 1(H: V). Length of chain is 30 m. Draw longitudinal section of the road and a typical cross section and prepare an estimate of earth work?

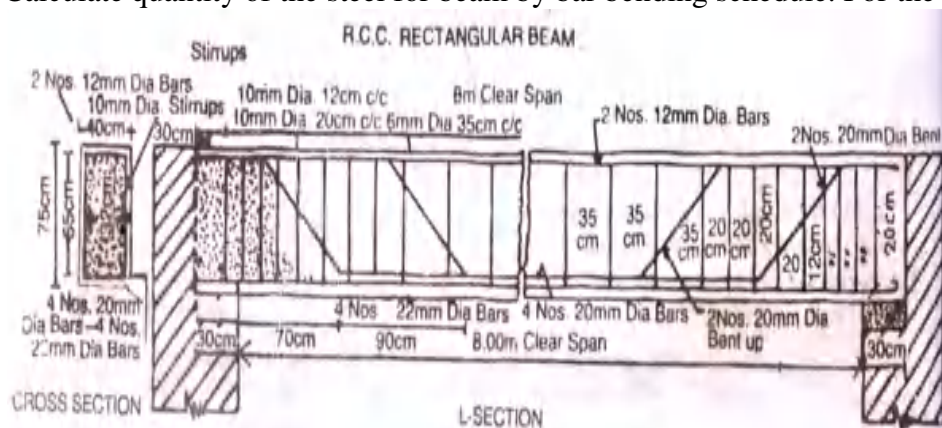
Distance	400	430	460	490	520	550	580	610	640
Chainage	20	21	22	23	24	25	26	27	28
R.Lof ground	106.00	106.60	106.44	106.98	106.45	106.28	106.05	105.20	105.38

## UNIT-III

6. Workout the rate analysis for random rubble store masonry in superstructure in cement sand mortar in 1:6 proportion including supply of all materials, labour, T&P etc. For prevailing rates.
- (OR)**
7. Work out rate analysis for 1:2:4 cement concrete work in foundation and plinth including all materials and supply. Apply and mention the current prevailing rates.

## UNIT-IV

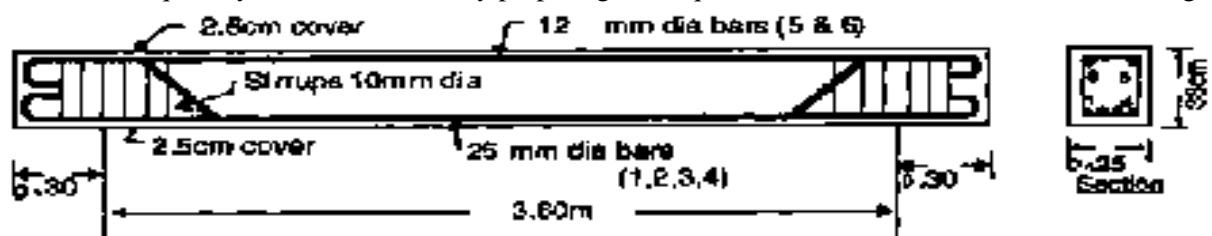
8. Calculate quantity of the steel for beam by bar bending schedule. For the Given Figure 2



**Fig: 2**

**(OR)**

9. Workout the quantity of reinforcement by preparing bar requirement schedule of a beam Shown in fig:3



**Fig:3**

## UNIT-V

10. What are the essential requirements of a valid contract? Explain In Detail?  
Explain the following clauses used in conditions of contract? (i) Security deposit (ii) Compensation for day

**(OR)**

11. Write the types of contracts and explain briefly

# AR13

**CODE: 13EE4023**

**SET-1**

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

**IV B.Tech I Semester Regular Examinations, November-2016**

**POWER SYSTEM ANALYSIS  
(Electrical & Electronics Engineering)**

**Time: 3 Hours**

**Max Marks: 70**

**PART-A**

**ANSWER ALL QUESTIONS**

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

1. a) Write any two advantages of Per unit computation system.  
b) Mention the disadvantages of Newton-Raphson Method in load flow studies  
c) State the assumptions in Fast Decoupled load flow analysis  
d) Write the modification required in the  $Z_{bus}$  matrix of a power system when a branch is added between new bus and existing bus  
e) Write the terminal conditions for the unloaded synchronous generator in the case of SLG fault if the fault occurs in phase A.  
f) Mention different types of unbalanced faults  
g) What is the purpose of symmetrical fault analysis  
h) Draw the sequence network for L-G fault with ground impedance.  
i) Define transient state stability  
j) Write the formula for swing equation.

**PART-B**

**Answer one question from each unit**

**[5x12=60M]**

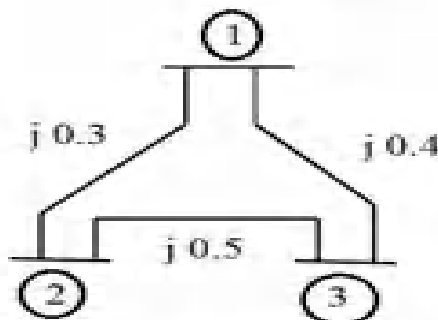
**UNIT-I**

2. (a) Prove that the Per unit impedance of a transformer from both primary and secondary sides is same. [5M]  
(b) Draw the Per Unit Diagram for the following power system network. Choose the base MVA as 50 MVA and base kV as 11 kV. [7M]



**(OR)**

3. (a) Determine the  $Y_{bus}$  matrix using direct inspection method for the following three bus system. All impedances are in p.u. [6M]



- b) Explain the approximations to be made for drawing single line diagram, impedance diagram and reactance diagram. [6M]

# AR13

CODE: 13EE4023

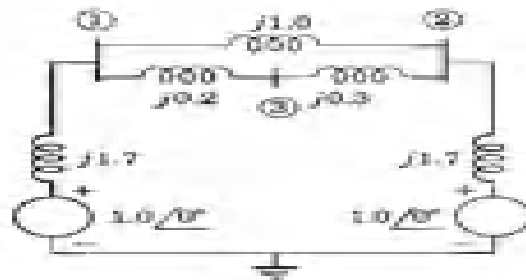
SET-1

## UNIT-II

4. Explain N-R load flow method with neat flow diagram. [12M]  
(OR)  
5. Explain the fast decoupled method using step by step method [12M]

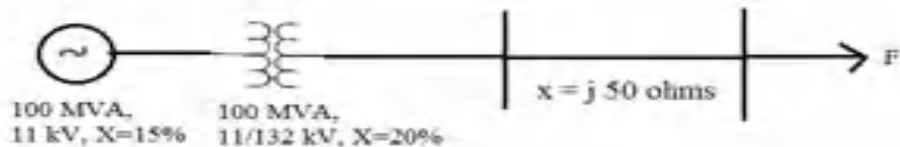
## UNIT-III

6. Determine the  $Z_{bus}$  matrix for the three bus system shown in the following figure [12 M]  
where the impedances are given in p.u.



(OR)

- 7 (a) Describe in detail about the symmetrical fault analysis using  $Z_{bus}$  method [5M]  
(b) Determine the fault current for a three phase fault supplied by the generator shown in the following figure. [7M]



## UNIT-IV

- 8 (a) Derive the expression for three phase power in terms of symmetrical components [6M]  
(b) A 20 MVA, 132 kV synchronous generator with grounded neutral has subtransient reactance of 0.25 p.u. The positive, negative and zero sequence reactances are 0.25 p.u, 0.2 p.u and 0.1 p.u respectively. For a single line to ground fault determine the fault current and phase voltages. [6M]

(OR)

- 9 (a) Derive the expressions for symmetrical components in terms of phase voltages in the case of unbalanced three phase system [6M]  
(b) The line currents of a three phase supply to an unbalanced load are  $I_R = (2+j5)$ ,  $I_Y = (5+j6)$ ,  $I_B = (-1-j2)$ . Find the sequence components for the currents [6M]

## UNIT-V

10. (a) Explain steady state Stability limit and Dynamic stability limit [6M]  
(b) Derive the expression for swing equation from the fundamentals [6M]  
(OR)  
11. (a) Explain the recent methods of improving transient stability [6M]  
(b) A 4 pole, 50Hz, 22kV turbo alternator has a rating of 150 MVA p.f. 0.8 lag. The moment of rotor has 8000 kgm<sup>2</sup>. Determine M and H. [6M]

**PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. What are essential boundary conditions?
2. Define shape functions in finite element methodologies?
3. What are the methods in eliminating boundary conditions?
4. Write the equation of potential energy theorem?
5. List out different degrees of freedom in constant strain triangle?
6. What is the transformation matrix for a plane truss element?
7. Write the stiffness matrix of beam element?
8. What are the gauss points in numerical integration?
9. Difference between consistent mass matrix and lumped mass matrix.
10. How to check displacements in ANSYS software.

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

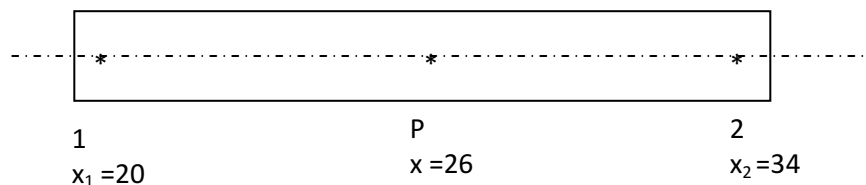
- 2 a) If a displacement field is described by  $u = (-x^2 + 2y^2 + 6xy) 10^{-4}$  and  $v = (3x + 6y - y^2) 10^{-4}$  determine the normal strain  $\epsilon_x$ ,  $\epsilon_y$  and shear strain  $\gamma_{xy}$  at the point  $x=1$  and  $y=0$ .
- b) Explain the procedure for solving a 1D problem using Rayleigh Ritz method with a suitable example.

**(OR)**

3. a) Write the elemental steps in solving a problem by using finite element methods.
- b) Derive the area of a circle by using finite element methods.

**UNIT-II**

4. a) An element is subjected to the following boundary conditions given below evaluate the shape functions and the natural coordinate system at the point P.



All dimensions are in mm

- b) If  $q_1 = 0.01$  mm and  $q_2 = -0.05$  mm determine the value of the displacement at the point P.

**(OR)**

5. a) Calculate the nodal displacements and the forces for the bar loaded as shown in figure.  $A_1 = 100 \text{ mm}^2$  and  $A_2 = 75 \text{ mm}^2$   $E = 30 \text{ N/mm}^2$ ,  $L_1 = 700 \text{ mm}$  and  $L_2 = 300 \text{ mm}$ .



# AR13

**CODE: 13ME4027**

**SET-1**

- b) Write the importance of using penalty approach in solving a problem with a suitable example.

## UNIT-III

6. a) Write the shape functions of a CST element.  
b) Derive the stiffness matrix for a CST element.

**(OR)**

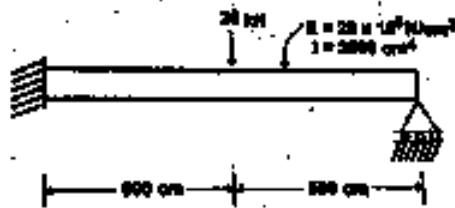
7. a) Derive the stiffness matrix for a plane truss element from that of a bar element from basic principles.  
b) Derive the direction cosines for a plane truss element.

## UNIT-IV

8. Define beam element and derive the its Hermite shape functions in global co-ordinate system

**(OR)**

9. a) A beam is fixed at one end and supported by roller at the other end has a 2KN concentrated load applied at the centre of the span; calculate the deflection under the loading conditions.



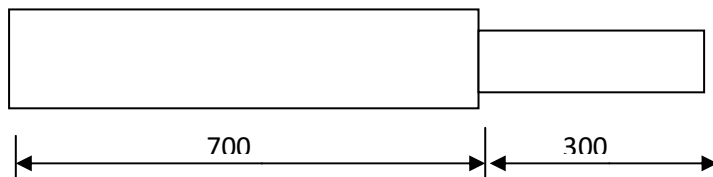
- b) Draw the shear force and bending moment diagrams for the above beam problem

## UNIT-V

10. a) Define DOF? List out various element types used in ANSYS software with neat sketches.  
b) Write the step by step procedure involved in dynamic analysis of a bar element.

**(OR)**

11. a) Derive the consistent mass matrix of a bar element.  
b) Determine the natural frequency of a stepped bar element as shown below having individual areas of cross sections  $A_1=100 \text{ mm}^2$  and  $A_2=75 \text{ mm}^2$   $E= 30 \text{ N/mm}^2$  and density  $7800 \text{ kg/m}^3$



# AR13

**CODE: 13EC4028**

**SET-1**

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI  
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**IV B.Tech I Semester Regular Examinations, November-2016**

**RADAR ENGINEERING  
(Electronics & Communication Engineering)**

**Time: 3 Hours**

**Max Marks: 70**

## **PART-A**

**ANSWER ALL QUESTIONS**

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

1. a) What is radar?  
b) What do you mean by maximum unambiguous range?  
c) What is the limitation of simple CW radar  
d) What is the limitation of MTI radar which do not occur with CW radar  
e) Define the term Staggered PRFs  
f) What is the functioning of range gates  
g) Define Doppler frequency in MTI radar  
h) Explain Sequential Lobing  
i) What are the advantages of CW radar  
j) What is noise figure

## **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

### **UNIT-I**

2. (a) Explain the radar block diagram and its operation [6 M]  
(b) Explain about the Receiver noise and derive the signal to noise ratio [6 M]  
(OR)
3. (a) Derive the simple form of the radar equation [6 M]  
(b) Explain about the radar cross section of targets [6 M]

### **UNIT-II**

4. (a) Explain about Doppler effect [5 M]  
(b) Explain the operation of CW radar with neat block diagram [7 M]  
(OR)
5. (a) Derive the expression for the velocity of the target when the target is moving away from the radar in the case FM-CW radar [8 M]  
(b) Explain the applications of CW radar [4 M]

# AR13

**CODE: 13EC4028**

**SET-1**

## UNIT-III

6. (a) A simple MTI delay line canceller is an example of time domain filter .Why? [8 M]  
Explain.  
(b) Explain the advantages of non coherent MTI Radar [4 M]  
**(OR)**
7. (a) Draw the block diagram of non coherent MTI radar and explain the function of each block in detail [8 M]  
(b) How does MTI radar differ from pulse Doppler radar? [4 M]

## UNIT-IV

8. (a) Explain the block diagram of amplitude comparison monopulse radar for single angular coordinate and explain its operation [8 M]  
(b) Explain about sequential Lobing [4 M]  
**(OR)**
9. (a) What are the advantages of monopulse radar over conical scan radar? [5 M]  
(b) Compare the tracking techniques [7 M]

## UNIT-V

10. (a) Explain different types of Duplexers [6 M]  
(b) Derive the frequency response function of the matched filter receiver [6 M]  
**(OR)**
11. (a) Explain about Phased Array Antennas [6 M]  
(b) Explain various types of radar displays [6 M]



# AR13

CODE: 13CS4021

**SET-1**

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

**IV B.Tech I Semester Regular Examinations, November-2016**

## **MOBILE COMPUTING (COMMON TO CSE & IT)**

**Time: 3 Hours**

**Max Marks: 70**

### **PART-A**

**Answer all questions**

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

1. a) Define a cell.  
b) Is IEEE 802.11 and Wi-Fi same? State the purpose of Wi-Fi  
c) What is meant by GPRS?  
d) Define Reverse Tunnelling?  
e) What are the general problems of satellite signals travelling from a satellite to a receiver?  
f) Define encapsulation ?  
g) Name the requirements for a mobile IP and justify them. Does mobile IP fulfill them all?  
h) How and why does I-TCP isolate problems on the wireless link? What are the main drawbacks of this solution?  
i) What is selective retransmission?  
j) What is the behaviour that TCP shows after the detection of Congestion?

### **PART-B**

**Answer one question from each unit**

**[5x12=60M]**

#### **UNIT-I**

2. Why, typically, is digital modulation not enough for radio transmission? What are general goals for digital Modulation? What are typical schemes? [12 M]

**(OR)**

3. (a) What is Multiplexing and briefly explain different multiplexing techniques. [6 M]  
(b) Explain in detail about mobile system networks? [6 M]

#### **UNIT-II**

4. Name the main elements of the GSM system architecture and describe their functions. What are the advantages of specifying not only the radio interface but also all internal interfaces of the GSM system? [12M]

[6 M]

**(OR)**

5. What are the functions of authentication and encryption in GSM? How is system Security maintained? [12 M]

# AR13

CODE: 13CS4021

SET-1

## UNIT-III

6. Define the problem of Hidden and exposed terminal. What happens in the case of such terminals if Aloha, Slotted Aloha, Reservation Aloha or MACA is used? [12 M]  
Suggest a solution.

(OR)

7. Explain the term interference in the space, time, frequency, and code domain. [12 M]  
What are countermeasures in SDMA, TDMA, FDMA, and CDMA systems?

## UNIT-IV

8. What are the general problem of mobile IP regarding security and support of quantity of service? [12 M]

(OR)

9. How DHCP can be used for mobility and support in mobile IP with a neat sketch? [12 M]

## UNIT-V

10. (a) Write brief notes on congestion control n traditional TCP. [6 M]  
(b) Compare several enhancements to TCP for mobility give their relative advantages and disadvantages [6 M]

(OR)

11. (a) Evaluate why traditional packet routing protocol for wired network cannot be used straightaway in a MANET. Discuss how the routing protocols? [8 M]  
(b) List out the properties of MANET [4 M]