

AR16

CODE: 16CE4027

SET-1

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

IV B.Tech I Semester Regular Examinations, November-2019

ESTIMATION AND QUANTITY SURVEYING

(Civil Engineering)

Time: 3 Hours

Max Marks: 70

All parts of the Question must be answered at one place

Answer any Three questions Part-A

[3 X 14 = 42 M]

PART-A

1. a) What are the different types of Approximate Estimate? 7M
b) Summarize the advantages of centre line method over long wall and short wall method? 7M
2. a) Illustrate about the quantities of materials required for the following works 7M
Ist Brick work in CM 1:5 – 1 m³
b) Plastering in CM 1:6, 12mm thick – 10 m³ 7M
3. Calculate the quantity of earthwork in a tabular form for a portion of road from given data 14 M
side slopes 2:1 in banking, 1½ :1 in cutting formation width of road is 10m. Levels have been taken every 40m apart. RL of formation 139.0m at 200m and in downward gradient of 1 in 200.

Distance(m)	200	240	280	320	360	400	440	480	520	560
RL of Ground	117.2	138.35	138.20	137.65	138.0	137.2 135.3	135.1	135.95	136.6	136.15

4. Calculate the quantity of steel reinforcement required for a roof slab of 3m X 6m and fully resting over a wall of 300 mm thick on all sides. 14 M
Details of reinforcement:
(i) 10 mm dia main bars are provided in shorter span direction at 150 mm c/c.
Alternative bars are bent up neat the support and all bars are hooked at both ends.
(ii) 8 mm dia distribution bars are provided in longer span direction at 200 mm c/c. To hold the bent up bars in position 3 no's distribution bars are provided on each side at top.
(iii) Cover: Bottom and top cover to reinforcement taken as 15 mm and end cover of 25 mm is provided.
5. List and explain the different forms of contracts with respect to suitability advantage and disadvantages. 14M

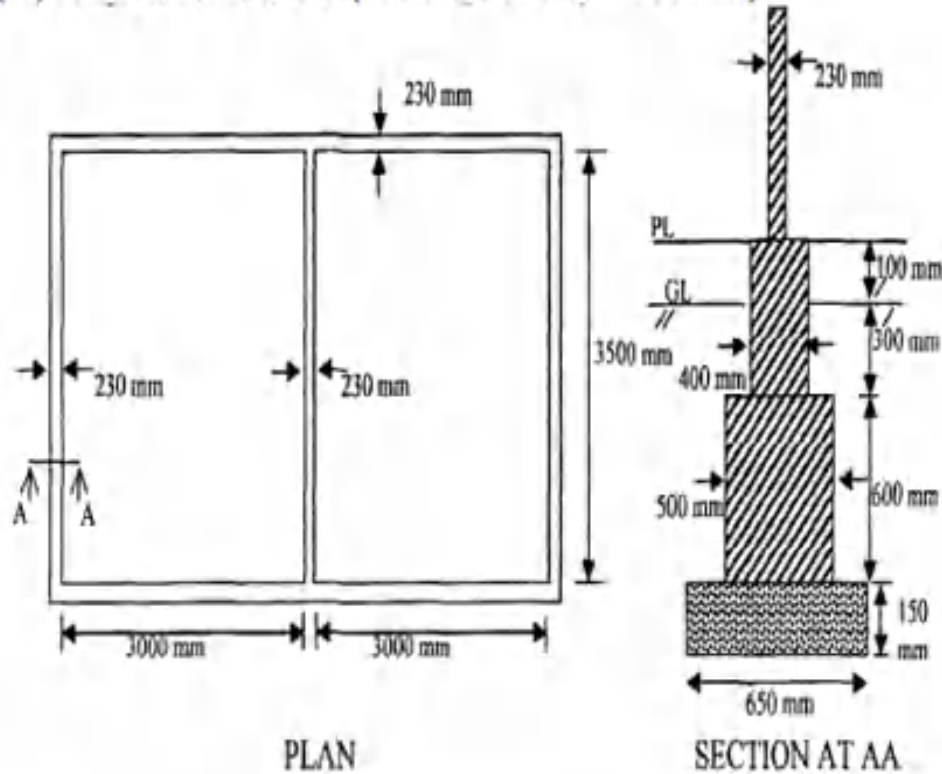
Part-B

Answer one question in Part-B

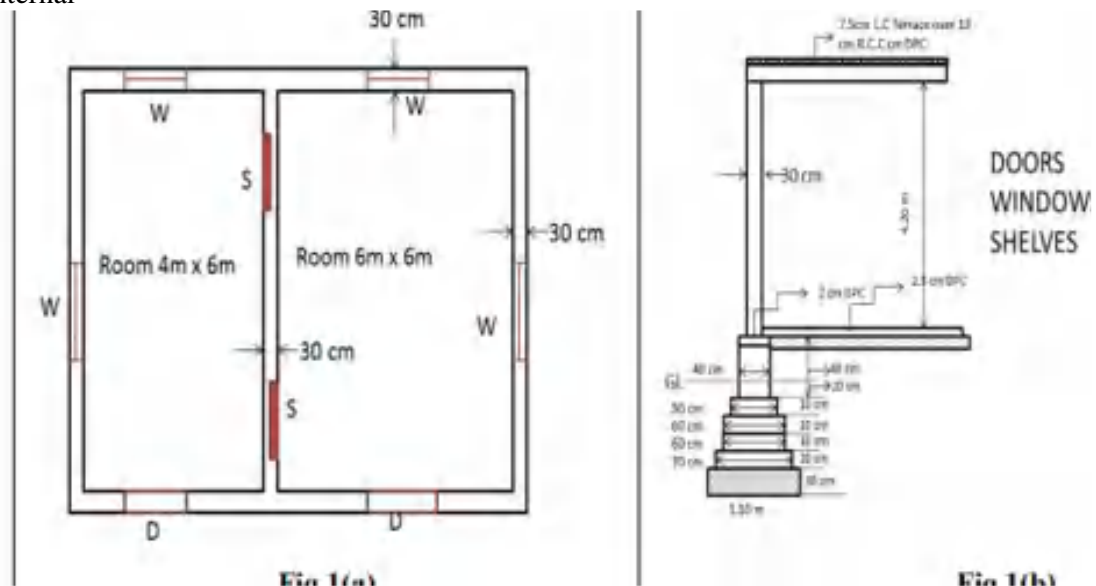
[1 X 28 = 28 M]

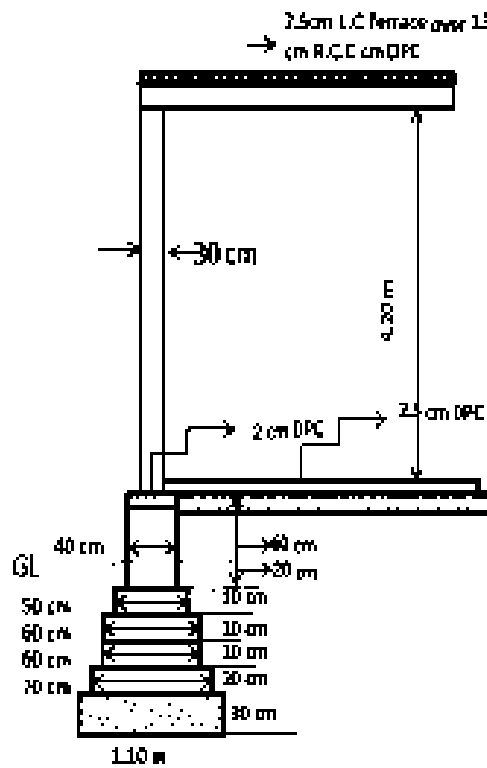
6. The Plan and sectional elevation of the building are given in Fig Find the Estimate the quantities for the following items of works. 28M

- (i) Earthwork in Excavation
(ii) Plain Cement Concrete for Foundation
(iii) Ist class Brickwork for foundation
(iv) Concrete for roof slab (thickness of slab = 100 mm)



7. The Plan and sectional elevation of the building are given in Fig-1a, b Find the Estimate for quantities for the following items of works. 28M
- (i) RCC slabs, lintels & sunshades. (ii) Doors and windows (iii) Plastering internal





DOORS D - 1.20 m x 2.10m
 WINDOWS W - 1.00x1.50m
 SHELVES S - 1.00m x 1.50m

Fig 1(b)

AR16

CODE: 16EE4025

Set No.2

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

IV B.Tech I Semester Regular Examinations, November-2019

HIGHVOLTAGEENGINEERING

(Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Compare in brief various numerical techniques to study or evaluate the electric field distribution in dielectricmedium. (7M)
b) What is a surge voltage? What is the difference between a power frequency voltage and a surge voltage? What are the various sources that produce surge voltages? (7M)
(OR)
2. Discuss the different numerical methods available for estimation of electric field distribution in dielectric media. (14M)

UNIT-II

3. a) Explain the effect of moisture content on breakdown strength of liquid dielectrics. (7M)
b) Define Townsend's first and second ionization coefficients. Explain Townsend's criterion for spark breakdown. (7M)
(OR)
4. a) Explain different ionization by collisionmethods. (7M)
b) Explain the concept of cavity breakdown in liquid dielectrics. (7M)

UNIT-III

5. a) Explain the use of capacitance voltage transformer used for high voltage measurements in power systems. (7M)
b) Explain the operation of a cascade transformer with a neat diagram for generation of high AC voltage. (7M)
(OR)
6. Discuss the principle operation of Cockcroft-Walton voltage multiplier circuit with neat diagram. (14M)

UNIT-IV

7. Explain briefly various tests to be carried out on a cables. (14M)
(OR)
8. Explain the measurement of dielectric strength of an insulating material by using High Voltage Schering Bridge with suitable diagram (14M)

UNIT-V

9. Explain the principle of electro static separator. Discuss its applications of electro static separator used in high voltage engineering. (14M)
(OR)
10. Explain the principle of electro static coping. Discuss its applications. (14M)

AR16

CODE: 16ME4029

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November-2019

OPERATIONS RESEARCH

(Mechanical Engineering)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain different models used in OR 6M
b) A television company operates two assembly lines, Line I and Line II. Each Line 8M
is used to assemble the components of 3 types of television; color, standard,
economy. The expected daily production on each line is as follows :

TV Model	Line – I	Line – II
Color	3	1
Standard	1	1
Economy	2	6

The daily running costs of two lines average Rs.6000/- for Line I and Rs.4000 for Line II. It is given that the company must product at least 24 color, 16 standard and 48 economy TV sets for which an order is pending. Determine the number of days the two lines should be run to meet the requirements

(OR)

2. Use simplex method to solve 14M
Maximize $Z = 3x_1 - x_2$
Subject to $4x_1 + 3x_2 \leq 12$
 $4x_1 + x_2 \leq 8$
 $4x_1 - x_2 \leq 8$
 $x_1, x_2 \geq 0$

UNIT-II

3. Solve the following transportation problem whose costs are given below 14M

		to					availability
		D1	D2	D3	D4	D5	
from	A	5	8	6	6	3	800
	B	4	3	7	6	6	500
	C	8	4	6	6	4	900
requirements		400	400	500	400	800	

(OR)

4. Solve the following travelling salesman problem 14M

	A	B	C	D	E
A	∞	2	5	7	1
B	6	∞	3	8	2
C	8	7	∞	4	7
D	12	4	6	∞	5
E	1	3	2	8	∞

UNIT-III

5. Use graphical method to minimize the time needed to process the following jobs on the machines shown, for each machine find the job which should be done first. Also Calculate the total time needed to complete both the jobs. 14M

Job 1.	Sequence	A	B	C	D	E
	Time	<u>3</u>	<u>4</u>	<u>2</u>	<u>6</u>	<u>2</u>
Job 2.	Sequence	<u>B</u>	<u>C</u>	<u>A</u>	<u>D</u>	<u>E</u>
	Time	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>6</u>

(OR)

6. a) Discuss in brief about the characteristics of queuing system. 6M
 b) People arrive at a theatre ticket booth is a poisson distributed arrival rate of 25 per hour. Service time is constant at 2 mins. Calculate 8M
 i) The mean number in the waiting time
 ii) The mean waiting time
 iii) What is the probability that there is no customer in counter

UNIT-IV

7. a) A firm has a machine whose purchase price is Rs 1,00,000. Its running cost and resale price(Rs) at the end of different years are as follows 8M

year	1	2	3	4	5	6
Running cost	7500	8500	10000	12500	17500	27500
Resale price	85000	76500	70000	60000	40000	15000

Obtain the economic life of the machine and the minimum average cost

- b) Explain how the theory of replacement is used in following problems 6M
 a. Replacement of items when maintenance cost varies with time
 b. Replacement of items that fail completely

(OR)

8. a) Using dominance principle to simplify the rectangular game with the following pay of matrix, and solve it graphically: 8M

		Player B			
		I	II	III	IV
Player A	I	18	4	6	4
	II	6	2	13	7
	III	11	5	17	3
	IV	7	6	12	2

- b) Write about the rules of dominance 6M

UNIT-V

9. A small project is composed of 7 activities whose time estimates are listed below. 14M

Activity	Estimated duration (weeks)		
	Optimistic	Pessimistic	Most likely
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	1	6	15

- (i) Draw the project network.
(ii) Find expected duration and variance for each activity.
(iii) Calculate early and late occurrence time for each node. What is expected project length.

(OR)

10. a) A project consists of 4 activities. Their logical relationship and time taken is given along with crash time and cost details. if the indirect cost is Rs 2000 per week, find the optimum duration and optimum cost 10M

Activity	Predecessor	Normal		Crash	
		Time in days	Cost in Rs	Time in days	Cost in Rs
A	-	4	4000	2	12000
B	A	5	3000	2	7500
C	A	7	3600	5	6000
D	B	4	5000	2	10000
		Total	15600		35500

- b) Discuss about cost considerations in project scheduling

4M

AR16

CODE: 16EC4030

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular Examinations, November-2019

SATELLITE COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain basic concept of Satellite communications 7M
b) Explain the historical background of satellite communication. 7M
- (OR)**
2. a) List the applications of Satellites. 7M
b) Explain satellite frequency bands. 7M

UNIT-II

3. a) Define the following terms: Subsatellite path, Apogee, Perigee, Line of apsides, Ascending node, Descending node, Line of nodes. 7M
b) Explain Orbital elements. 7M
- (OR)**
4. a) Explain the effect of atmospheric drag on satellites. 7M
b) An LEO satellite is in circular polar orbit with an altitude of 1000 km. A transmitter on the satellite has a frequency of 2.65 GHz. Find the velocity of the satellite in orbit. 7M

UNIT-III

5. a) Explain about satellite antennas. 7M
b) Explain the power subsystem in satellite. 7M
- (OR)**
6. a) Explain the operation of double conversion transponder 7M
b) Explain the operation of onboard processing transponder 7M

UNIT-IV

7. a) Calculate the gain of a 3-m parabolic reflector antenna at a frequency of 6 GHz. 7M
b) An antenna has a gain of 46 dB at 12 GHz. Calculate its effective area. 7M
- (OR)**
8. a) Derive the expression for C/N of uplink. 7M
b) Derive the expression for C/N of downlink. 7M

UNIT-V

9. a) Explain tracking system in earth station of satellite communications. 7M
b) Explain the various feed systems employed in an earth station antenna. 7M
- (OR)**
10. a) Explain the block diagram representation of a typical earth station transmitter. 7M
b) Explain coverage and frequency considerations for geo-stationary satellites 7M

AR16

CODE: 16CS4027

SET-1

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

IV B.Tech I Semester Regular Examinations, November-2019

**MOBILE COMPUTING
(Common to CSE & IT)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain in detail Overview of some wireless communication systems. 7 M
b) Discuss in detail simplified reference layered model with neat sketch. 7 M
- (OR)**
2. a) Describe and discuss different mobile communication novel applications 7 M
b) Explain mobile computing limitations. 7 M

UNIT-II

3. a) Explain in detail GSM Bearer and tele services reference model with neat sketch. 7 M
b) Discuss in detail about GSM System architecture. 7 M
- (OR)**
4. a) Explain different possible handover scenarios in GSM. 7 M
b) Write short notes on GSM Localization and calling. 7 M

UNIT-III

5. a) Explain the Comparisons of SDMA, TDMA mechanisms. 7 M
b) Discuss in detail about code division multiplexing (CDM) characteristics. 7 M
- (OR)**
6. a) Write short notes on polling and Inhibit sense multiple access (ISMA). 7 M
b) Explain in detail Spread Aloha multiple access (SAMA) with neat sketch. 7 M

UNIT-IV

7. a) Describe and discuss Mobile IP Goals, assumptions and requirements. 7 M
b) Explain the optimized mobile IP protocol four additional messages. 7 M
- (OR)**
8. a) Discuss in detail basic Dynamic host configuration protocol(DHCP) 7 M
b) Explain in detail mobile IP Tunnelling and encapsulation. 7 M

UNIT-V

9. a) Explain Indirect TCP (ITCP) with advantages and disadvantages? 7 M
b) Write short notes on Selective retransmission Classical TCP. 7 M
- (OR)**
10. a) What is a MANET? Explain the properties of a MANET. 7 M
b) Describe and discuss different spectrum of MANET applications 7 M

AR13

CODE: 13CE4025

SET-2

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

IV B.Tech I Semester Supplementary Examinations, November, 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) What is centre line method of estimating a building?
b) What are contingent charges?
c) Write specifications for DPC?
d) Write the order of booking dimensions.
e) What is the expected out turn of PCC 1:4:8 per mason per day?
f) The area of a sloping surface of a protective embankment of mean height d , side slopes $S : 1$ and length L is
g) What is security money?
h) What is Technical sanction?
i) What is Plinth area?
j) Define Standard rent.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. Explain in detail any four main items of work in building estimation. Like earth work excavation, PCC, DPC, Masonary etc 4x3=12 12M
- (OR)
3. Estimate the quantities of following items of a residential building given in fig1 12M
(By center line method)
 - a. Earthwork in Excavation in foundation
 - b. Lime concrete in foundation
 - c. First class Brick in 1:6 cement sand mortar in foundation and plinth
 - d. 2.5cm D.P.C

UNIT-II

4. Calculate the quantity of earthwork in a tabular form for a portion of road from given data side slopes 2:1 in banking, $1\frac{1}{2} : 1$ in cutting formation width of road is 10m. Levels have been taken every 40m apart. RL of formation 139.0m at 200m and in downward gradient of 1 in 200. 12M

Distance(m)	200	240	280	320	360	400	440	480	520	560
RL of Ground	117.2	138.35	138.20	137.65	138.0	137.2 135.3	135.1	135.95	136.6	136.15

(OR)

5. Reduced level of Ground along centerline 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 12M

(Horizontal : Vertical) length of chain is 30m

Draw the longitudinal cross section of road and typical cross section and prepare an estimate of earth work at a rate of 500/m³

Chainage	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

UNIT-III

6. Give the analysis of rates for the following items of work. 12M
- Earthwork excavation in foundation and basement
 - PCC 1:3:6 in foundation with 40mm granite.

(OR)

7. Give the analysis of rates for the following items of work. 12M
- For RCC work in beam with 2% reinforcement.
 - Second class brick work in superstructure with 1:3 cement mortar

UNIT-IV

8. Consider the beam shown in fig 2, consisting 2-12 diameter bars at top, and 2-16 diameter and 1 – 12 diameter bars at the bottom. Diameter of stirrup is 8mm spaced at 180mm center to center. Clear cover to reinforcement provided is 40mm. Calculate the total amount of steel required. 12M

(OR)

9. Calculate the quantity of steel required for an RCC column with footing shown in figure 3. Also, prepare schedule of bars for the column. 12M

UNIT-V

10. Explain in detail about 12M
- Lump sum contract
 - Piece rate contract

(OR)

11. Explain the standards of First class building and second class building 12M

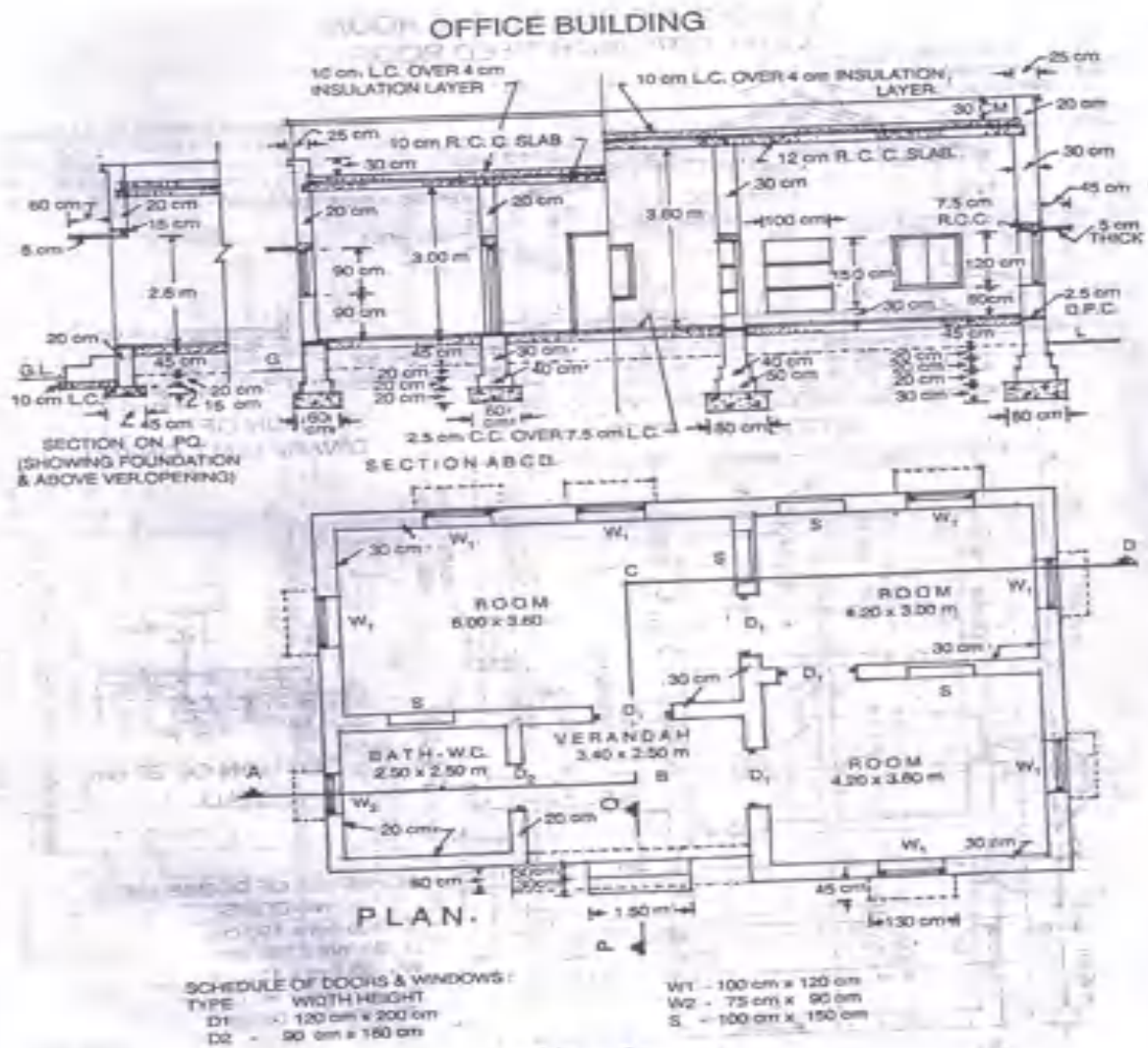


Fig - 1

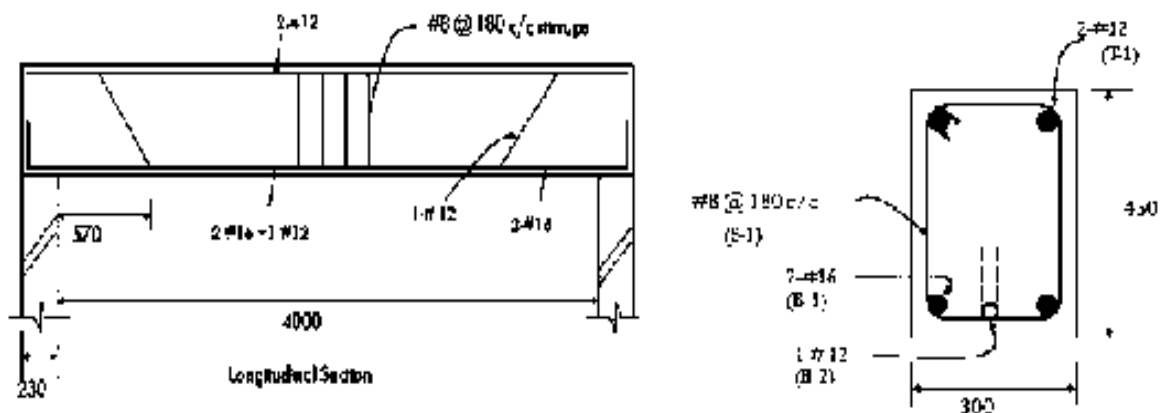


FIG 2

AR13

CODE: 13EE4025

SET-2

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

IV B.Tech I Semester Supplementary Examinations, November, 2019

HIGH VOLTAGE ENGINEERING

(Elective-II)

(Electrical & Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What is electric field stress?
b) Define mean free path.
c) Name any two theories to explain breakdown mechanism in liquids ?
d) What is meant by composite dielectric materials.
e) Draw the simple voltage doubler circuit?
f) Write the equation for Standard Impulse Wave ?
g) Define hundred percent flashover voltage.
h) What is the difference between type tests and routine tests?
i) What is the advantage of Electro Static precipitators?
j) Write any four industrial applications of high voltages?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. Explain how to compute electric field by Finite Difference Method. [12 M]
(OR)
3. Explain how to compute electric field by charge simulation method. [12 M]

UNIT-II

4. Write short notes on [12 M]
a) thermal breakdown mechanism and b) electro-mechanical breakdown mechanism in solids
(OR)
5. Derive the Townsend's current growth equation in primary and secondary ionization process. [12 M]

UNIT-III

6. With neat diagrams, explain the difference between Marx and modified Marx circuit. [12 M]
(OR)
7. Explain with diagram, how to measure High voltage using sphere gaps and what are the various factors influencing sparkover voltage? [12 M]

UNIT-IV

8. With the help of a block diagram, explain the process to measure radio interference. [12 M]

(OR)

9. Explain different testing methods of isolators and circuit breakers. [12 M]

UNIT-V

10. Explain the principle and operation of electro static separator. [12 M]

(OR)

11. Explain the process of Electrostatic copying using a relevant diagram. [12 M]

2 of 2

AR13

CODE: 13EC4030

SET-2

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

IV B.Tech I Semester Supplementary Examinations, November, 2019

TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS

(Electronics & Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are the functions of switching systems
b) Define SPC
c) Define time division switching
d) List modes of centralized SPC
e) Differentiate DTMF and rotary dialling
f) What is meant by takeoff angle
g) What is the difference between Repeater and Router
h) Define layered network architecture
i) Define DSL technology
j) What is ISDN?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a Explain the working principle of cross bar switch with a neat diagram. [6 M]
b Explain the elements of switching systems. [6 M]
(OR)
3. a Write about evaluation of Telecommunications. [6 M]
b What are the functions of switching systems? Explain [6 M]

UNIT-II

4. a Write about level2 processing in Distributed Stored program control. [6 M]
b Explain n- stage combination switching. [6 M]
(OR)
5. a Discuss about centralized SPC (stored program control) in electronic space division switching. [6 M]
b Compare Time division space and time division time switching systems. [6 M]

UNIT-III

6. a Explain the Subscriber loop systems. [6 M]
b Explain numbering plan of telephone network. [6 M]
(OR)
7. a Explain in channel signalling system. [6 M]
b Write about Network Traffic load and parameters. [6 M]

UNIT-IV

8. a Draw the simplified block diagram of a data communication network and explain. [6 M]
b Explain OSI reference model in data communication. [6 M]

(OR)

9. a Compare message switching and circuit switching. [6 M]
b Explain public switched data networks. [6 M]

UNIT-V

10. a Explain ISDN architecture. [6 M]
b Write about Signalling in ISDN. [6 M]

(OR)

11. a Discuss SONET devices, frame and frame transmission. [6 M]
b Explain about Cable Modem, HFC Networks [6 M]

2 of 2

AR13

CODE: 13CS4021

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, November, 2019

MOBILE COMPUTING

(Computer Science & Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What is mobile computing?
b) Define User Mobility
c) What are the logical channels in GSM?
d) What is the difference frequency bands supported in GSM?
e) Define the term wireless?
f) What are Types of Wireless Devices
g) What is ALOHA?
h) What is registration
i) What are the advantages of M-TCP
j) What are the characteristics of MANETS

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Explain mobile system networks 6M
b) Discuss novel applications of Mobile Computing. 6M
- (OR)
3. Explain types of transmissions in detail 12M

UNIT-II

4. Explain functional architecture of GSM. 12M
- (OR)
5. a) Explain call handling in GSM 6M
b) Discuss handover in GSM 6M

UNIT-III

6. a) Explain 3G wireless communication 6M
b) Discuss features of 4G networks 6M
- (OR)
7. a) Discuss CDMA-2000 communication standards 6M
b) What are the differences between CDMA and GSM 6M

UNIT-IV

8. a) What is Mobile IP? Explain tunneling in the context of mobile IP. 6M
b) What is basic purpose of DHCP? Name the entities of DHCP 6M
- (OR)
9. a) How can DHCP be used for mobility and support of mobile IP? 6M
b) How does mobile IP work? What are the challenges with mobile IP with respect to high speed mobility? 6M

UNIT-V

10. a) Write about Snooping TCP 6M
b) Explain indirect TCP 6M
- (OR)
11. What is Mobile Ad hoc Network (MANET)? What are the various types of routing algorithms in MANETS? Explain each of them in detail 12M