AR16

CODE: 16CE4027 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, August-2021

ESTIMATION AND QUANTITY SURVEYING

(Civil 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

Answer any Three questions Part-A **[3 X 14 = 42 M]**

PART-A

1.	a)	Write definition, purpose and data required for estimation	4M
	b)	Write methods of estimations and explain	10M
2.	a)	Write a short note on Mean Sectional Area Method?	4M
	b)	The following width of road embankment is 10m. The side slopes are 2:1 The depth along the centre line road at 50m intervals are 1.25, 1.10, 1.50, 1.20,1.0,1.10, 1.15m, calculate the Quantity of earth work by Mid sectional rule	10M
3	a)	Calculate analysis of rates for 20 mm cement plastering with proportion 1:3 in ceiling for 1 sq. m. Take 100 sqm	7M
	b)	Perform the rate analysis for cement concrete work in foundation with the proportion of the cement concrete as 1:5:10 for 1 Cu. m. Take 10 cu .m	7M
4	a)	How can the number of main bars and distribution bars in slabs be found out?	4M
	b)	Prepare the Detailed estimate for of a R.C.C beam of 8 metre clear span and 75×40 cm in section from the given drawing as shown in fig.2	10M
5	a)	Explain arbitration	4M
	b)	Calculate the standard rent of a government residential building newly constructed from the following data:	10M

i) Cost of land - Rs. 25,000.
ii) Cost of construction of the building - Rs. 55,000.
iii) Cost of roads within the compound, and fencing - Rs 3000.
iv) Cost of sanitary and water supply - 8% of the cost of building.

v) Cost of electrical installation including fans - 8% of the cost of building.
vi) Municipal house tax - Rs. 400 per annum.
vii) Water tax - Rs. 250 per annum.
Property tax - Rs140 per annum. (9M)

PART-B

Answer any one question from Part-B **[1x28=28M]**

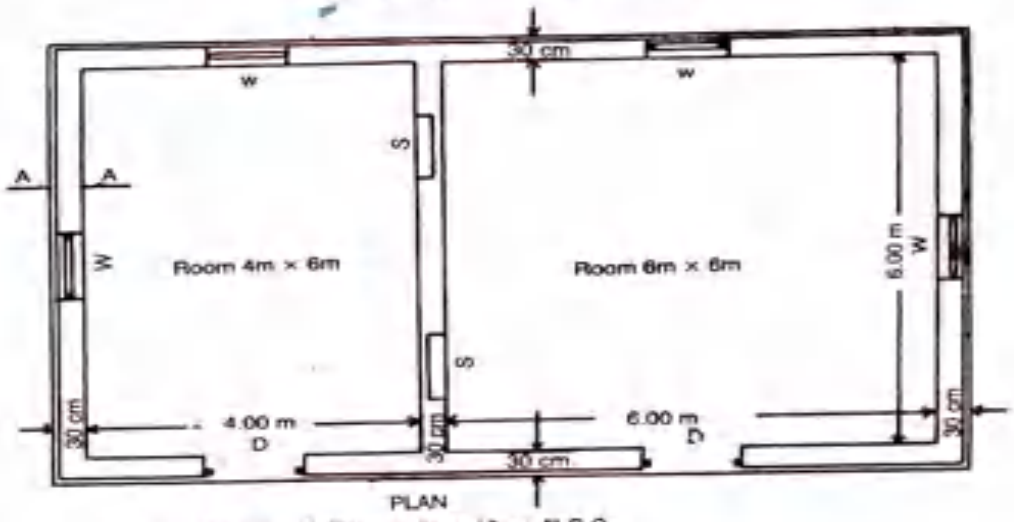
6. a) Explain the term "Approximate Estimation"?
b) Estimate the required quantities of the following from the given fig 1 by using Individual wall method.
i. Earth work excavation in foundation
ii. Lime Concrete in foundation

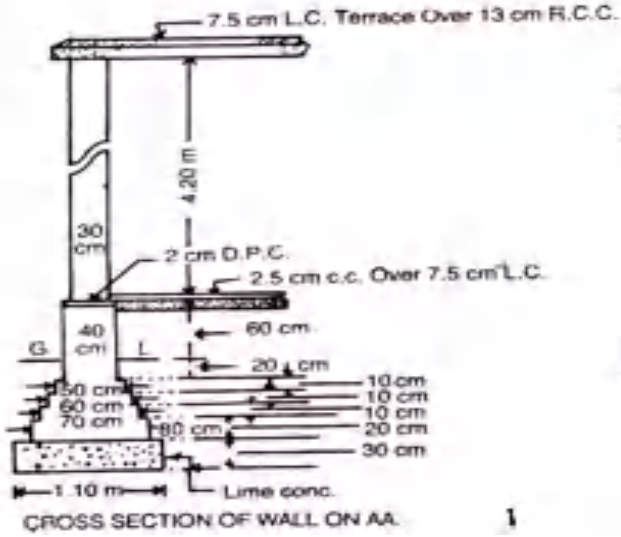
(OR)

7. a) What are the units of measurement for?
i. Plastering ii. . Earth filling in foundation trenches iii. white washing
iv . Painting furniture
b) Estimate the quantities of the following from the given fig 1 by Centre line method.
i. . First class brick work in 1:6 cement sand mortar in foundation and plinth.
ii..2.5 cm damp proof course

Fig.1

TWO ROOMED BUILDING





CROSS SECTION OF WALL ON AA

All Walls are of same section
Lintels over Doors, Windows and Shelves are 15 cm thick R.B.

Doors D-1.20 m × 2.10 m
Windows W-1.00 × 1.50 m
Shelves S-1.00 m × 1.50 m

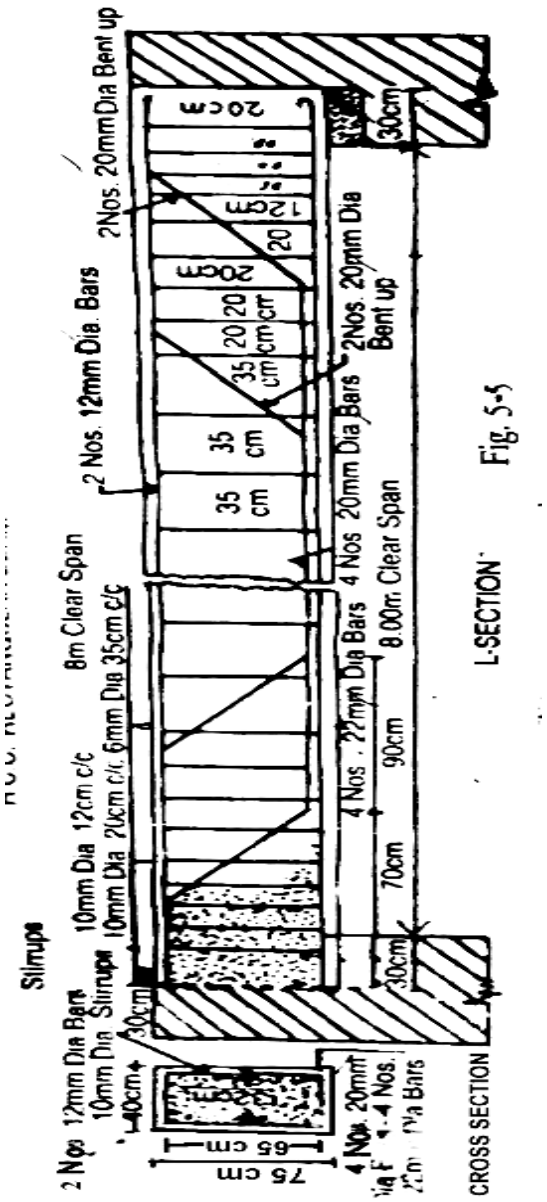

Stirrups
10mm Dia 12cm c/c
10mm Dia Stirrups 20cm c/c
8m Clear Span
2 Nos. 12mm Dia. Bars
2Nos. 20mm Dia Bent up
35 cm
4 Nos. 20mm Dia Bars
4 Nos. 22mm Dia Bars
8.00m Clear Span
90cm
70cm
30cm
L-SECTION
CROSS SECTION

Fig. 5-5

Fig.2

AR16

CODE: 16EE4025 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, August-2021

HIGH VOLTAGE ENGINEERING

(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.		Briefly explain various numerical methods for estimation of electric field in dielectric materials. Discuss their relative advantages and disadvantages.	14M
		(OR)	
2.	a)	Explain how the electric stress can be estimated and controlled	7M
	b)	Define surge voltages. Explain how they are distributed in the windings of power apparatus	7M

UNIT-II

3.	a)	What is Pachen's law? How do you account for the minimum voltage for breakdown under a given 'p x d' condition?	7M
	b)	What are commercial liquid dielectrics? How are they di□erent from pure dielectrics?	7M
		(OR)	
4.		Explain thermal break down in solid dielectrics and how it is practically more significant than other mechanisms.	14M

UNIT-III

5.	a)	With a neat sketch explain Cockcroft-walton voltage multiplier circuit	7M
	b)	What are the drawbacks of Van De Graaff generator	7M
		(OR)	
6.	a)	Explain the working of Electro static voltmeter	7M
	b)	Explain any one method of measuring high frequency Impulse currents	7M

UNIT-IV

7.		Discuss the various test carried out on Insulators, circuit breaker at HV labs	14M
		(OR)	
8.		Discuss Partial Discharge measurement in detail.	14M

UNIT-V

9.	a)	Explain the working principle and operation of an electrostatic separator	7M
	b)	Explain how electrostatic copying is done using high voltages	7M
		(OR)	
10.		Explain the principle and operation of electrostatic separator with a neat diagram	14M

AR16

CODE: 16ME4029 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, August-2021

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) Briefly explain about the characteristics of operations research 4M

b) Use simplex method to solve 10M

$$\text{Maximize } Z = 3x1 - x2$$
$$\text{Subject to } 4x1 + 3x2 \leq 12$$
$$4x1 + x2 \leq 8$$
$$4x1 - x2 \leq 8$$
$$x1, x2 \geq 0$$

(OR)

2. Solve by graphical method. 14M

$$\text{Min } Z = 2x_1 + x_2$$

Subject to, $3x_1 + x_2 = 3$; $4x_1 + 3x_2 \geq 6$; $x_1 + 2x_2 \leq 4$;

$$x_1, x_2 \geq 0$$

UNIT-II

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

		to					
		D1	D2	D3	D4	D5	availability
from	A	4	1	2	6	9	100
	B	6	4	3	5	7	120
	C	5	2	6	4	8	120
	requirements	40	50	70	90	90	

(OR)

4. a) Solve the following Assignment problem whose costs are given 10M

operator

		1	2	3	4	5
	1	10	12	15	12	8
	2	7	16	14	14	11
job	3	13	14	7	9	9
	4	12	10	11	13	10
	5	8	13	15	11	15

b) Formulate assignment problem as a mathematical model 4M

UNIT-III

5. Six jobs go first on machine A, then on machine B and lastly on machine C. The order of the completion of jobs has no significance. The following table gives the machine time for the six jobs and the three machines. 14M

	Processing time (In hours)		
Jobs	Machine A	Machine B	Machine C
1	8	3	8
2	3	4	7
3	7	5	6
4	2	2	9
5	5	1	10
6	1	6	9

Find the sequence of the jobs that minimizes elapsed time to complete the jobs. Find also the idle time of machines A, B, C?

(OR)

6. a) A tax consulting firm has four service counters in the office to receive people who have problems and complaints about their income, wealth and sales taxes. Arrivals average 80 persons in an 8-hour service day. Each tax adviser spends an irregular amount of time in servicing the arrivals which have been found to have exponential distribution. The average service time is 20 minutes. Calculate: 8M

(i) The average number of customers in the system.

(ii) Average number of customers waiting for service.

(iii) Average waiting time for the customer in the system and in queue.

(iv) The probability that a customer has to wait for service.

(v) The expected number of idle tax advisers at any specified time

b) Arrivals at the telephone booth are considered poisson with an average time of 10min between one arrival and the next. The duration of the phone call is assumed to be exponential with mean 3min. 6M

i) What is the probability that a person arriving at the booth will have to wait

ii) The telephone department will install a second booth when convinced that an arrival would expect waiting for at least 3min for phone. By how much should the flow of arrivals increase in order to justify second booth

iii) Average number of units in the system

UNIT-IV

7. a) The purchase price of a machine is Rs52,000. The installation charges amount to Rs 14,400 and its scrap value is only Rs 6,400. The maintenance cost in various years is given below 10M

Year	1	2	3	4	5	6	7	8
Maintenance cost	1000	3000	4000	6000	8400	11600	16000	19000

After how many years should the machine be replaced .Assume that the machine replacement can be done at the year end.

b) What is replacement? Describe some important replacement situations 4M

(OR)

8. a) What are the characteristics of a game 4M

b) Using dominance principle solve the pay of matrix, given by 10M

		Player B			
		I	II	III	IV
Player A	I	3	2	4	0
	II	3	4	2	4
	III	4	2	4	0
	IV	0	4	0	8

UNIT-V

9. A project consists of the following activities. Draw the network.Find the minimum time required to complete the project. Calculate the float values for the activities. 14M

Activity	Predecessor (s)	Duration (days)
A	--	16
B	--	10
C	--	8
D	C	11
E	D,G	11
F	B	7
G	A,F	8
H	A, F	8
I	B	12
J	H, I	18
K	D, G	6
L	J, K	8

(OR)

10. A project consists of the following activities. 14M

Activity	Time Estimates (days)
1-2	2-5-14
1-6	2-5-8
2-3	5-11-29
2-4	1-4-7
3-5	5-11-17
4-5	2-5-14
5-8	2-2-8
6-7	3-9-27
7-8	7-13-31

Calculate

a) Expected project duration,

b) What is the probability of extending the project more than 38 days,

c) If the due date is 35 days, what is the probability of meeting the due date?

AR16

CODE: 16EC4030 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, August-2021

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 the operation of General Satellite link with block diagram.	7M
	b)	What are the frequency bands used for satellite services?	7M
		(OR)	
2.	a)	Explain the Basic satellite repeater.	7M
	b)	What are the advantages of Satellite communication?	7M

UNIT-II

3.	a)	Explain Kepler's three laws of planetary motion.	7M
	b)	Explain about GEO Satellite services.	7M
		(OR)	
4.	a)	Explain the orbital mechanics and Subsatellite point.	7M
	b)	Explain the satellite look angles.	7M

UNIT-III

5.	a)	Discuss the TT&C facilities of a satellite communications system.	7M
	b)	Explain about satellite antennas.	7M
		(OR)	
6.	a)	Explain attitude and orbit control systems	7M
	b)	Explain Single conversion transponder	7M

UNIT-IV

7.	a)	Explain Satellite-Switched TDMA	7M
	b)	Explain rain effects at Ku Band	7M
		(OR)	
8.	a)	An LNA is connected to a receiver which has a noise figure of 12 dB. The gain of the LNA is 40 dB, and its noise temperature is 120 K. Calculate the overall noise temperature referred to the LNA input.	7M
	b)	In a link-budget calculation at 12 GHz, the free-space loss is 206 dB, the antenna pointing loss is 1 dB, and the atmospheric absorption is 2 dB. The receiver [*G*/*T*] is 19.5 dB/K, and receiver feeder losses are 1 dB. The EIRP is 48 dBW. Calculate the carrier-to-noise spectral density ratio.	7M

UNIT-V

9.	a)	Explain the block diagram representation of a typical earth station.	7M
	b)	Define the following : Equatorial orbits, Inclined orbits, Elliptical orbits	7M
		(OR)	
10.	a)	Illustrate delay and throughput considerations for low earth orbit	7M
	b)	Illustrate coverage and frequency considerations for low earth orbits	7M

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AR16

CODE: 16CS4027 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, August-2021

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 the mobile computing architecture with neat sketch.	7 M
	b)	Discuss in detail mobile system networks with suitable examples.	7 M
		(OR)	
2.	a)	Discuss the short history of wireless communication systems.	7 M
	b)	Describe and explain the limitations of the mobile communication systems.	7 M

UNIT-II

3.	a)	Explain the protocol architecture of GSM with signaling protocols neat sketch	7 M
	b)	Discuss in detail GSM structuring of time using a frame hierarchy.	7 M
		(OR)	
4.	a)	Explain GSM Radio interface in a GSM system.	7 M
	b)	Describe and discuss the GSM mobile Services.	7 M

UNIT-III

5.	a)	What are the advantages of a fixed TDM pattern compared to random, demand driven TDM?	7 M
	b)	Explain the Comparisons of FDMA, CDMA mechanisms.	7 M
		(OR)	
6.		Discuss the problem of hidden and exposed terminals. Explain What happens in the case of such terminals if Aloha, slotted Aloha, reservation Aloha, or MACA is used?	14M

UNIT-IV

7.	a)	What is a triangular routing? Explain optimized mobile IP.	7 M
	b)	Explain Generic routing encapsulation (GRE) Protocol filed with neat sketch.	7 M
		(OR)	
8.	a)	Discuss different ways of tunnel IP encapsulations with neat diagrams.	7 M
	b)	What are the Entities and terminology understand in the mobile IP.	7 M

UNIT-V

9.		Describe Classical TCP improvements and explain any two Classical TCP improvements	14M
		(OR)	
10.	a)	List various MANET routing Algorithms and explain DSDV Routing algorithm	7 M
	b)	Explain security in MANETs.	7 M

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