AR16

CODE: 16CE4027 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-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) Differentiate between Revised & Supplementary Estimate. 7M
   b) Classify the two main methods used for estimating building? 7M
2. a) Summarize the general rules of Measurement & also explain the deductions and additions to be applied in the case of estimation of plastering 7M
   b) Discuss in detail the following measurements of a building? 7M
   (a) Plinth area (b) Plot area

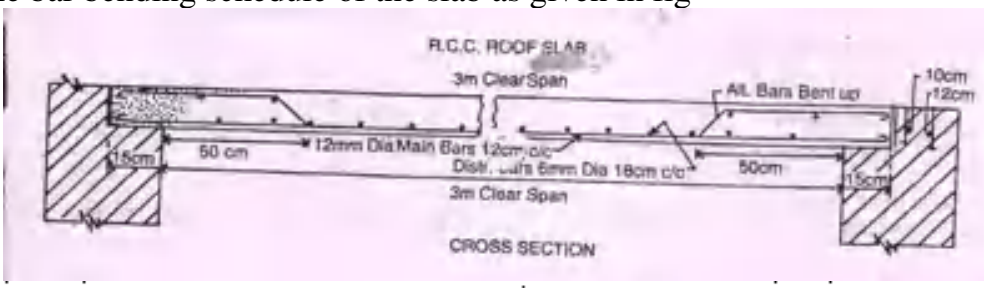
3. Estimate the cost of earthwork for a portion of a road from the following data. 14M

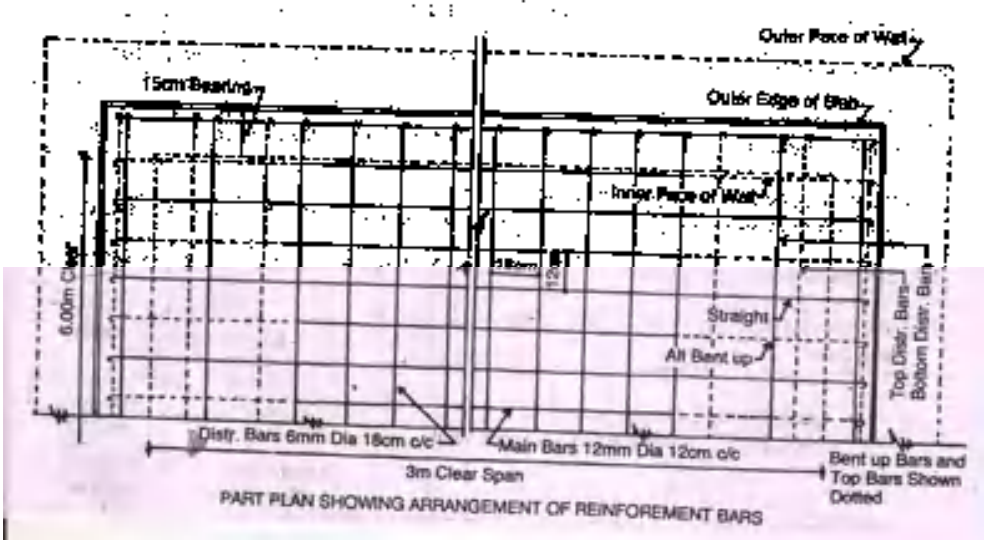
Road width at the formation surface is 8m.Side slopes 2:1 in banking and 1.5:1 in cutting. Length of chain is 30m.

Chainage	20	21	22	23	24	25	26	27	28	30
Ground level	71.20	71.25	70.90	71.25	70.80	70.45	70.20	70.35	69.10	69.70
Formation level	70.00	Upward gradient of 1in 200								

Take the rates of earthwork as Rs.275/percu.m in banking and Rs.350/percu.m in cutting.

4 Give the bar bending schedule of the slab as given in fig 14M





5 a) Write a brief notes on cash book and impress amount 14M

b) Explain the civil accounting system and PWD accounting system.

PART-B

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

6 28M

The Plan and sectional elevation of the building are given in Fig-1a, b

Find the abstract and detailed Estimate the quantities for the following items of works.

(i) 1st class brickwork in Super structure CM1:6

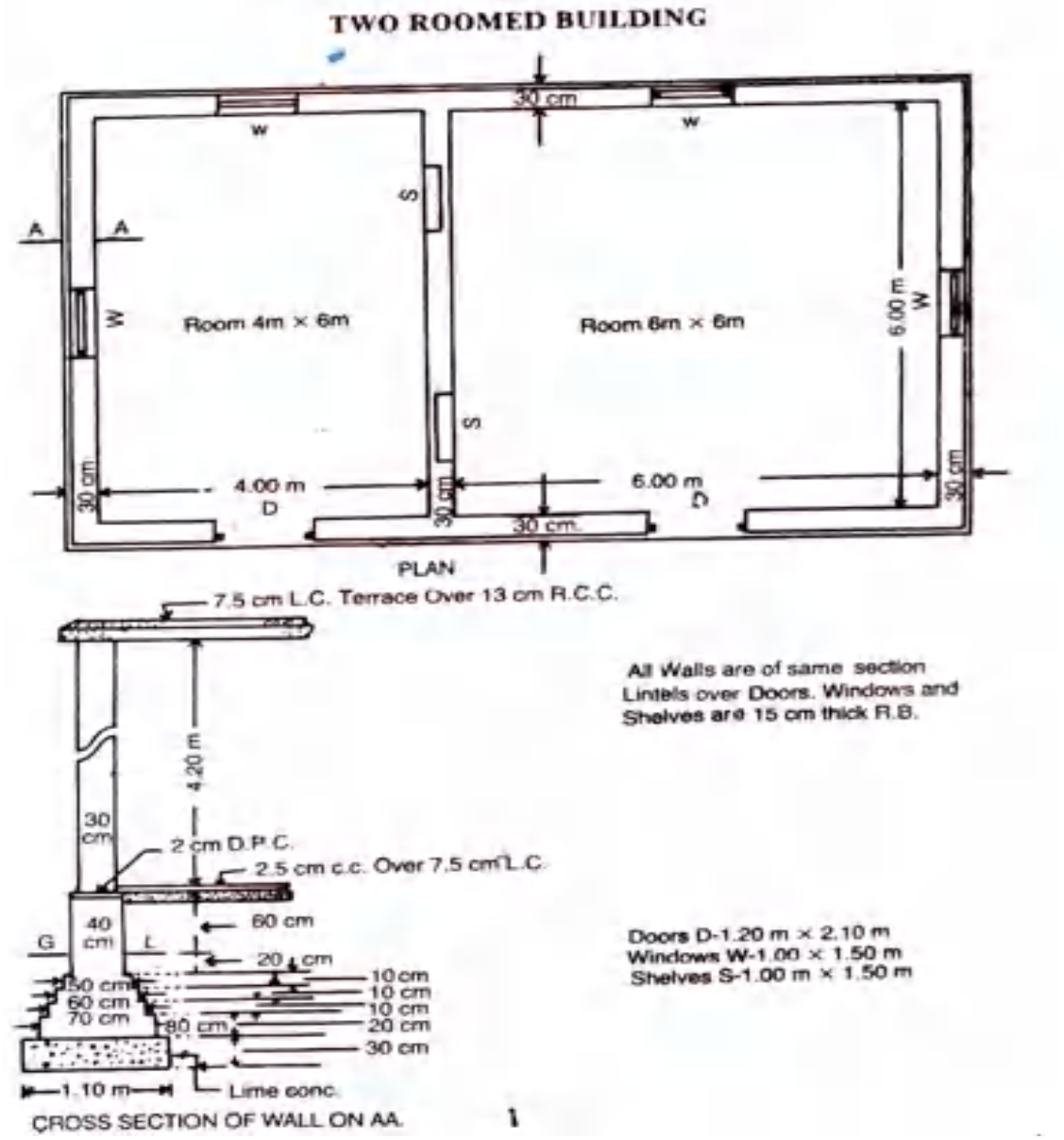
(ii) Lime concrete in foundations (iii) 2.5 cm CC damp proof course.

Assume the rates as per the local market for abstract estimate.

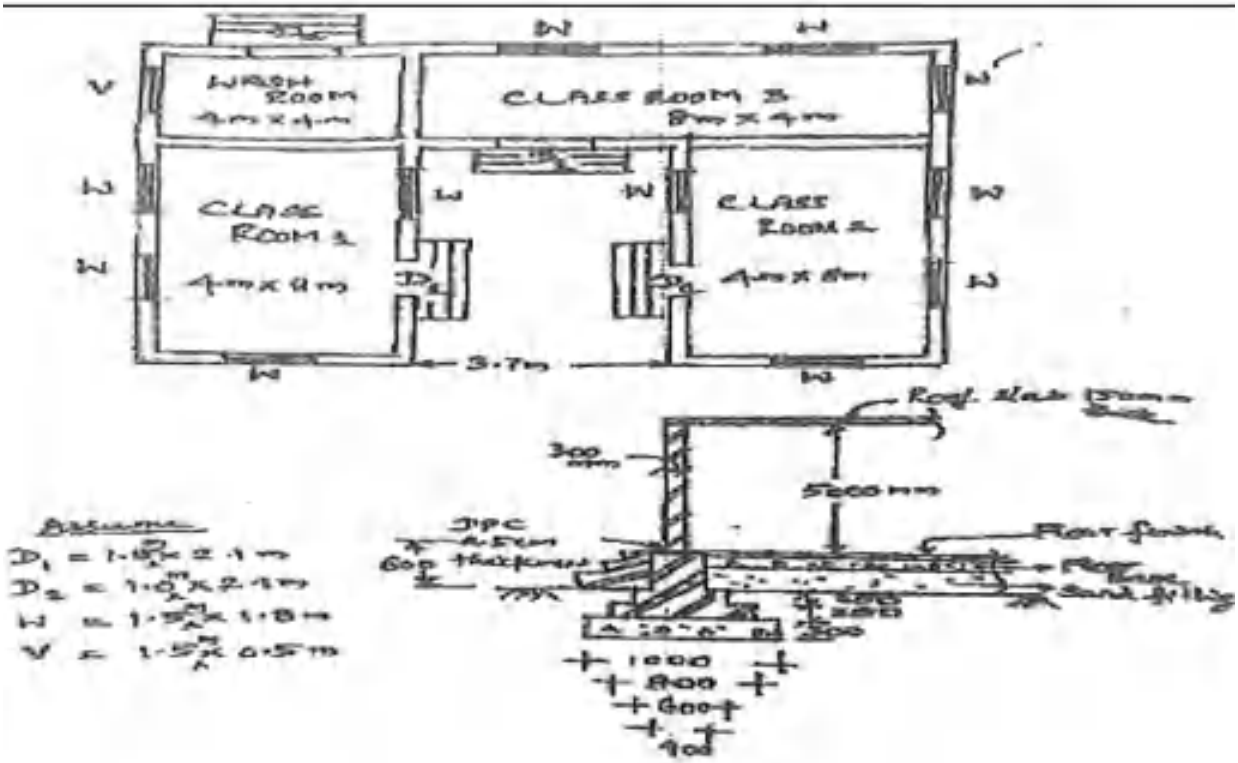
i) first class brick work in super structure with cm 1:6 Rs.=300 per cum

ii) Lime concrete in foundations is = Rs 220 per cum

iii) 2.5 cm CC damp proof Course is Rs. 18/- per sqm.



7. The Plan and sectional elevation of the building are given in Fig-3 28M
List the Estimate the quantities for the following items of works.
(i) Ist class brickwork in Super structure CM1:6
(ii) PCC in foundations (iii) Ceiling plastering



(All Dimensions are in mm)

Fig 3

CODE: 16EE4025 **AR16** **Set No.1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-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.	a)	Explain the Finite Element Method for solving the electric field problems.	**(7M)**
	b)	Explain about finite difference method for solving the electric field problems..	**(7M)**
		(OR)	
2.	a)	Explain charge simulation method briefly.	**(7M)**
	b)	Explain the necessity of control of transient or impulse voltages in power apparatus.	**(7M)**

UNIT-II

3.	a)	State Pachen's law and explain about its Pachen's curve.	**(7M)**
	b)	Explain clearly suspended particle mechanism of liquid breakdown.	**(7M)**
		(OR)	
4.		Describe briefly various mechanism of breakdown in solids.	**(14M)**

UNIT-III

5.	a)	Explain clearly the basic principle of operation of an electrostatic generator.	**(7M)**
	b)	Describe with neat diagram the principle of operation, application of Van de Graf generator.	**(7M)**
		(OR)	
6.		Discuss various methods of measuring high d.c. and a.c. currents.	**(14M)**

UNIT-IV

7.		Explain briefly various tests to be carried out on a bushing.	**(14M)**
		(OR)	
8.		Study the measurement of D.C.resistivity by using D.C. Galvanometer arrangement with suitable diagram?	**(14M)**

UNIT-V

9.		Discuss working Principle Of electrostatic separator, explain with a suitable diagram and applications.	**(14M)**
		(OR)	
10.		Explain the principle and operation of electro static precipitator with a neat diagram.	**(14M)**

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AR16

CODE: 16ME4029 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-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 Solve: 14M

Minimize $S = 1a - 3b + 2c$

$3a - 1b + 3c \leq 7$

$-2a + 4b + 0c \leq 12$

$-4a + 3b + 8c \leq 10$ and a, b, c, all ≥ 0.

(OR)

2 A company manufactures two product A and B. These are machined on machines 14M
X and Y. A takes one hour on machine X and one hour on Machine Y. Similarly product B takes 4 hours on Machine X and 2 hours on Machine Y. Machine X and Y have 8 hours and 4 hours as idle capacity. The planning manager wants to avail the idle time to manufacture A and B. The profit contribution of A is Rs. 3/– per unit and that of B is Rs.9/– per unit. Find the optimal product mix.

UNIT-II

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

		to					
		D1	D2	D3	D4	D5	availability
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. Four different jobs are to be done on four machines, one job on each machine, as set up costs and times are too high to permit a job being worked on more than one machine. The matrix given below gives the times of producing jobs on different machines. Assign the jobs to machine so that total time of production is minimized. 14M

Machines (time in hours)

Jobs	A	B	C	D
P	10	14	22	12
Q	16	10	18	12
R	8	14	20	14
S	20	8	16	6

UNIT-III

5. a) What are the assumptions Made in Sequencing Problems 4M

   b) 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. 10M

Job 1.	Sequence	A	B	C	D	E
	Time	3	4	2	6	2
Job 2.	Sequence	B	C	A	D	E
	Time	5	4	3	2	6

(OR)

6. a) In a departmental store one cashier is there to serve the customers. And the customers pick up their needs by themselves. The arrival rate is 9 customers for every 5 minutes and the cashier can serve 10 customers in 5 minutes. Assuming Poisson arrival rate and exponential distribution for service rate, find: 8M
   (a) Average number of customers in the system.
   (b) Average number of customers in the queue or average queue length.
   (c) Average time a customer spends in the system.
   (d) Average time a customer waits before being served.

   b) Trains arrive at the yard every 15 minutes and the service time is 33 minutes. If the line capacity of the yard is limited to 4 trains, Find: 6M
   (a) the probability that the yard is empty and
   (b) The average number of trains in the system.

UNIT-IV

7. Solve the game whose payoff matrix is: 14M

		B		
		I	II	III
A	I	1	7	2
	II	6	2	7
	III	5	1	6

(OR)

8. A firm is using a machine whose purchase price is Rs 13,000/-. The installation charges amount to Rs. 3600/- and the machine has a scrap value of only Rs. 1600/- because the firm has a monopoly of this type of work. The maintenance cost in various years is given in the following table. 14M

Year	1	2	3	4	5	6	7	8	9
Cost (Rs.)	250	750	1000	1500	2100	2900	4000	4800	6000

The firm wants to determine after how many years the machine should be replaced on economic considerations, assuming that the machine replacement can be done only at the year end.

UNIT-V

9 Construct the network diagram for the following data. Calculate total float, free float, independent float, total project duration and the critical path? 14M

Activity	1-2	1-3	1-4	2-5	3-6	3-7	4-7	5-8	6-8	7-9	8-9	9-10
Duration (days)	2	2	2	4	5	8	4	2	4	5	3	4

(OR)

10. 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 optimal duration and optimal cost. 14M

Activity	*Predecessor*	*Normal*		*Crash*	
		Time in days	*Cost in Rs/-*	*Time in days*	*Cost in Rs/-*
A	-	4	4,000	2	12,000
B	A	5	3,000	2	7,500
C	A	7	3,600	5	6,000
D	B	4	5,000	2	10,000
		TOTAL	15,600		35,500

AR16

CODE: 16EC4030 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-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 brief history of Satellite communications.	7M
	b)	Categorize the frequency allocations and draw the frequency spectrum for Satellite services.	7M
		(OR)	
2.	a)	Write about origin of satellite communication.	7M
	b)	What are the future trends of satellite communication?	7M

UNIT-II

3.	a)	What are different orbital effects that affect the performance of communication system?	7M
	b)	Explain about satellite launchers and launch vehicles.	7M
		(OR)	
4.	a)	Define and derive the expression for Azimuth angle.	7M
	b)	Define and explain different Kepler's laws with mathematical expressions.	7M

UNIT-III

5.	a)	With a neat diagram, explain how orbit control is obtained in spinner and 3-axis stabilized satellite systems.	7M
	b)	Explain about communication sub system in satellite system.	7M
		(OR)	
6.	a)	List and explain any two satellite antennas.	7M
	b)	Give the importance of power system in satellite system.	7M

UNIT-IV

7.		Summarize the steps to design a down link of satellite with an example.	14M
		(OR)	
8.	a)	Explain the principle involved in DAMA.	7M
	b)	Explain the following i. G/T ratio ii. Onboard processing.	7M

UNIT-V

9.	a)	Explain the following. i. Equatorial orbit. ii. Inclined orbit. iii.Molniya orbit.	7M
	b)	Explain the transmitter section of an earth station with a neat sketch.	7M
		(OR)	
10.	a)	Explain about earth station tracking system.	7M
	b)	Discuss the coverage and frequency considerations with regard to low earth orbits.	7M

AR16

CODE: 16CS4027 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Regular & Supplementary Examinations, February-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.		With neat diagram illustrate the architecture for mobile computing and discuss the applications.	14M
		(OR)	
2.	a)	Describe briefly about mobile system networks	8M
	b)	Draw and explain the simplified reference model for mobile computing.	6M

UNIT-II

3.	a)	What different services can provided by GSM? Discuss	6M
	b)	Discuss briefly about Handover in GSM	8M
		(OR)	
4.		Draw the following diagrams neatly with respect to GSM protocol a) GSM architectural diagram with subsystems and interfaces b) Steps in Mobile-terminated call(MTC)	14M

UNIT-III

5.	a)	Explain how priority based Multiple access schemes can be implemented.	6M
	b)	Explain TDMA and its features	8M
		(OR)	
6.	a)	Explain how multiple access with collision Avoidance (MACA) can avoid hidden terminal and exposed terminal problems.	8M
	b)	Discuss the features of 4G networks	6M

UNIT-IV

7.		Explain how tunnelling works in general and especially for mobile IP using IP-in-IP, minimal and generic routing encapsulation respectively. Discuss the advantages and disadvantages.	14M
		(OR)	
8.		List the entities and terminology of mobile IP and With the help of the diagram explain how an IP packets are transferred from fixed node mobile node?	14M

UNIT-V

9.	a)	What are the applications of MANET? Explain	6M
	b)	Discuss the Snooping TCP with advantages and disadvantages.	8M
		(OR)	
10.	a)	In an Indirect TCP access point is seen as the mobile host for the fixed host and as fixed host for the mobile host. Explain	6M
	b)	Describe the DSDV routing algorithm in MANET.	8M

AR13

CODE: 13CE4025 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February,2021

ESTIMATION AND QUANTITY SURVEYING

(Civil Engineering)

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

PART-A

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

1. a) Define lump sum item.
   b) How much percentage is allotted for electrification work in estimate?
   c) Write the prismoidal formula for calculating volume of earth work.
   d) Mention any two methods for calculating volume of earth work in canals.
   e) How many no. of bricks is required for 10 cu.m of brick work?
   f) What data is required for rate analysis?
   g) What do you mean by bar bending schedule?
   h) What is valuation?
   i) Define contract.
   j) What is the necessity of specification?

PART-B

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

UNIT-I

2. a) Explain in detal approximate method of estimating a building 8 M
   b) Explain the procedure for detailed estimate? 4 M

(OR)

3. Estimate the quantities of the following items of work by general method from the given drawings (Fig.1). 12 M
   i) Earth work in excavation in foundation ii) concrete in foundation
   iii) Brick work in foundation and plinth iv) 2.5 cm D.P.C
   v) Brick work in super structure

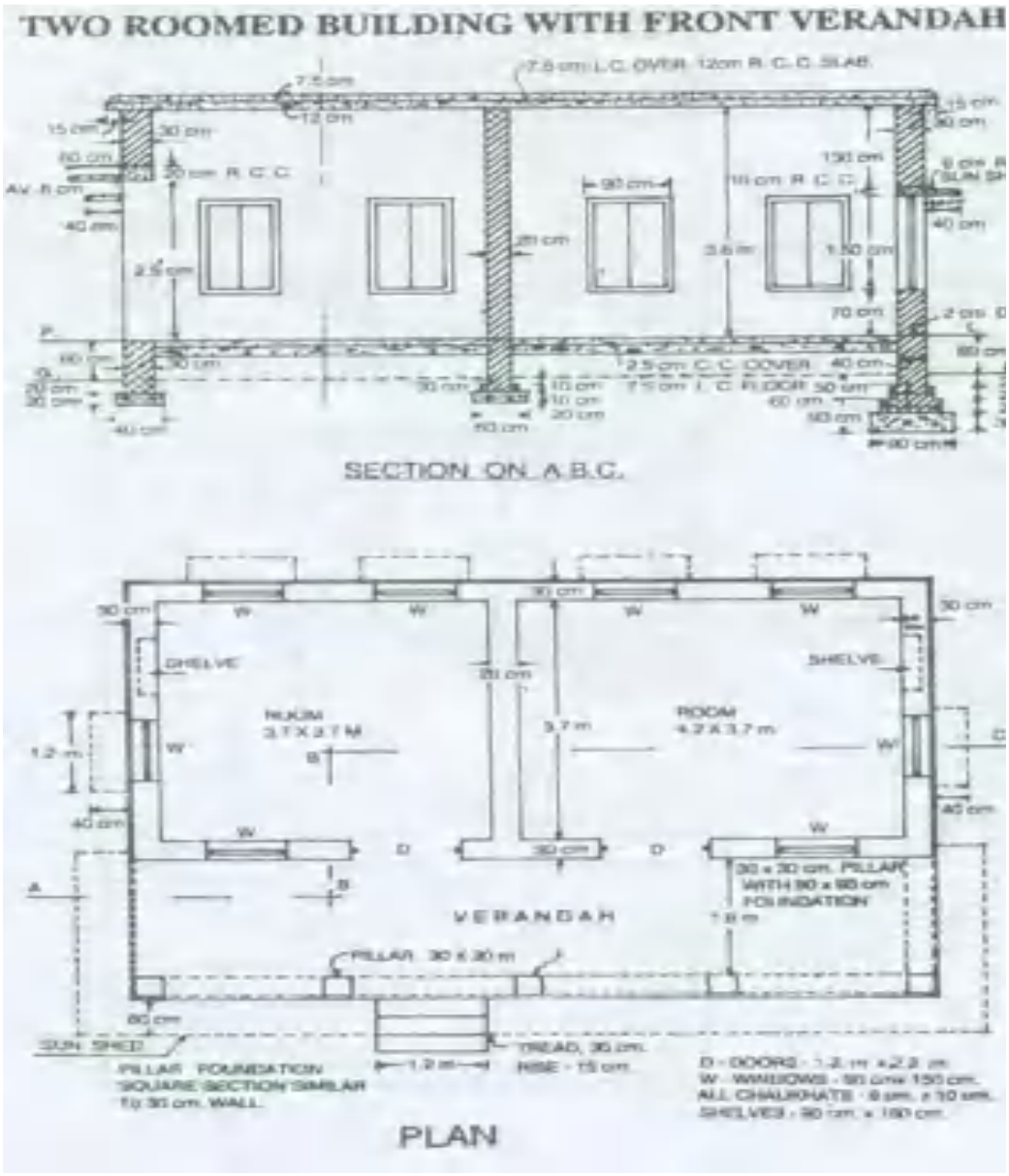

Fig.1

UNIT-II

4 Estimate the earth work for a road for given data. Formation width of road is 10 m and side slopes 2:1. R.L of formation 103.50 m at 0 station and an upward gradient of 1 in 200. The chainage between stations is 30 m. 12M

Station	1520	1540	1560	1580	1600	1620	1640
R.L of ground (m)	100.1	100.32	100.51	100.42	100.55	100.61	100.65
R.L of formation	101	Raising gradient 1 in 100					

(OR)

5. Estimate of earth work an irrigation canal has the following details: 12 M
Bed width 6m, top width of left bank 2.5m, top width of right bank 1.5m, side slope in cutting 1:1, side slopes of both banks 1.5:1, height of bank from bed 2.15m, longitudinal slope of bed 1 in 5000, R.L of bed level at station 1 is 97.40. The distance between stations is 50m.

Station :	1	2	3	4	5	6
R.L of G.L:	100.2	100.4	100.65	100.8	99.58	99.10

UNIT-III

6. Prepare a rate analysis for the following items 12 M
   (i) R.C.C work in columns with proportion 1:2:4 – unit cu.m.
   (ii) 2 cm flooring with 1:3: 6 - unit cu m.

(OR)

7. Prepare a rate analysis for the following items 12 M
   (i) Cement concrete in foundation with proportion 1:1.5:3
   (ii) 6 mm ceiling with 1:3 cement sand mortar
   (iii) White washing with one coat

UNIT-IV

8. Prepare a detailed estimate of a R.C.C roof slab of 3 m clear span and 6 m long from the given drawings (Fig.2). 12 M

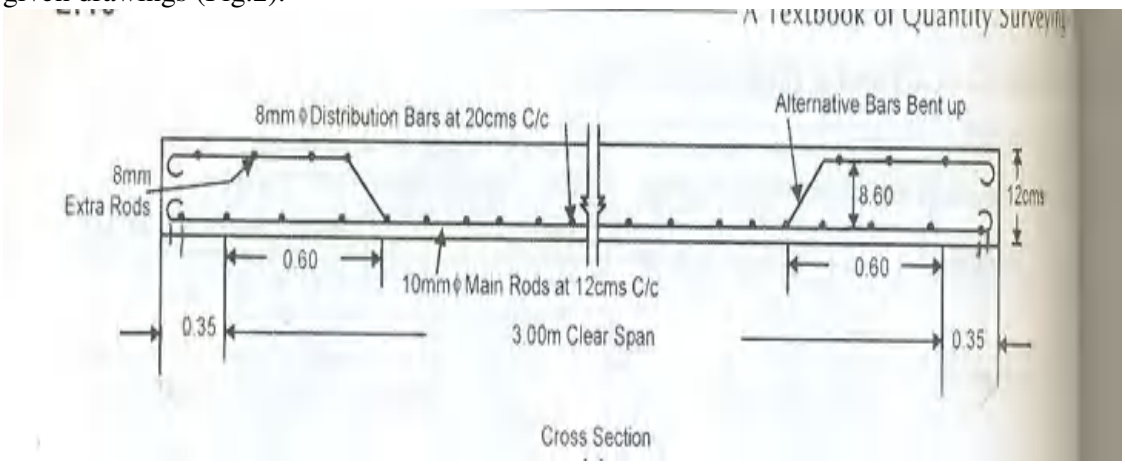

Fig.2

(OR)

9. Calculate the quantities of concrete and reinforcement for the R.C.C beam used over a clear span of 5.50 m. The walls supporting the beam are 450 mm and beam has 300 mm bearing over the wall on both sides the size of beam is250 mm X 550 mm. The beam has the following reinforcement. 12 M
   i) Main straight bars at bottom 20 mm ϕ - 2 Nos.
   ii) Main bent up bars 22 mm ϕ - 2 Nos.
   iii) Top bars 16 mm ϕ - 2 Nos.

   Stirrups bars 8 mm ϕ at both end of 1.5 m long and including bearing on either side, at 150 mm c/c, and middle 2.50m length at 210 mm c/c.

UNIT-V

10. What are the types of contracts and explain in detail. 12M

(OR)

11. a) What is depreciation? Explain the methods of depreciation? 6 M
    b) Explain the detailed specifications of the Mosaic flooring and Random Rubble stone masonry? 6 M

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