QUESTION BANK

CE 409-QUANTITY SURVEY AND VALUATION- S7 CE

MODULE –I

All the question contains 10 marks each

1. List down various types of estimates 10 marks (KTU DEC 2019)
2. What is meant by specification, explain about general specification of first class building?10 marks (KTU SEP 2020)
3. Briefly describe about Detailed specification of earth work excavation?10 marks (KTU JULY 2019)
4. Give the detailed specification of plastering of wall10 marks (KTU DEC 2018)
5. Write short notes on analysis of rates and data book 10 marks (KTU DEC 2020)
6. Give the detailed specification of plastering of wall with CM 1:3 mix. 10 marks (KTU JULY 2018)
7. Give the detailed specification of brick work 10 marks (KTU DEC 2019)
8. What is the deference between preliminary estimate and detailed estimate ? 10 marks (KTU DEC 2019)
9. Write short notes on importance of specification 10 marks (KTU DEC 2019)
10. Work out the specification for the following items 10 marks (KTU SEP 2020)
    a. Earth work for road in embankment
    b. Painting of three coats

MODULE -II

1. Work out unit rate for the following work 10 marks (KTU DEC 2019)

Material	Quantity	Rate
Broken stone	0.90 cu.m	550/cu.m
Sand	0.45 cu.m	600/cu m
Cement	330 kg	4300/ton
Mason	0.20	550/no
Men	4.50	550/no

2. Calculate the quantities of materials required for the
   Work in cement concrete 1:3:6 for 2010 m^3. 10 marks (KTU SEP 2019)

3. Work out unit rate for the following work
   RR masonry in cm 1:3:10 cum for basement 10 marks (KTU DEC 2019)

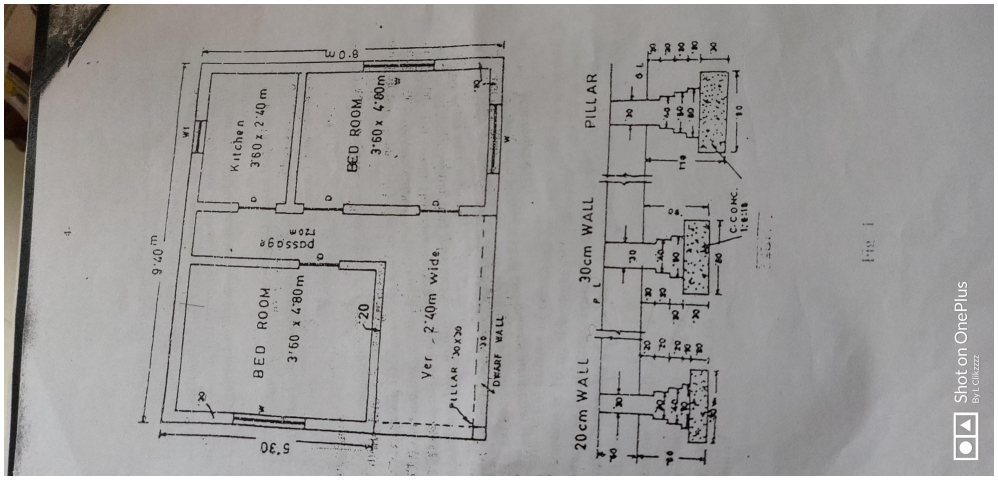
Material	Quantity	Rate
Rubble	20 cu.m	400/cu.m
Sand	5 cu.m	600/cu m
Cement	25 bags	550/ton
Mason	4.5 men	850/men
Men	9	650/no

4. Work out unit rate for RR masonry for foundation in cement & motor 1:6
   For 1 cum, rubble 1m^3@ 600/ m^3, river sand 0.3 m^3@1200/ m^3, cement 72 kg@ 5000/ton, mason 0.7/ m^3@ 450/person, man 0.35 m^3 250/no. 10 marks (KTU SEP 2020)
5. Work out unit rate for PCC 1:4:8 using broken stone. 10 marks (KTU DEC 2019)

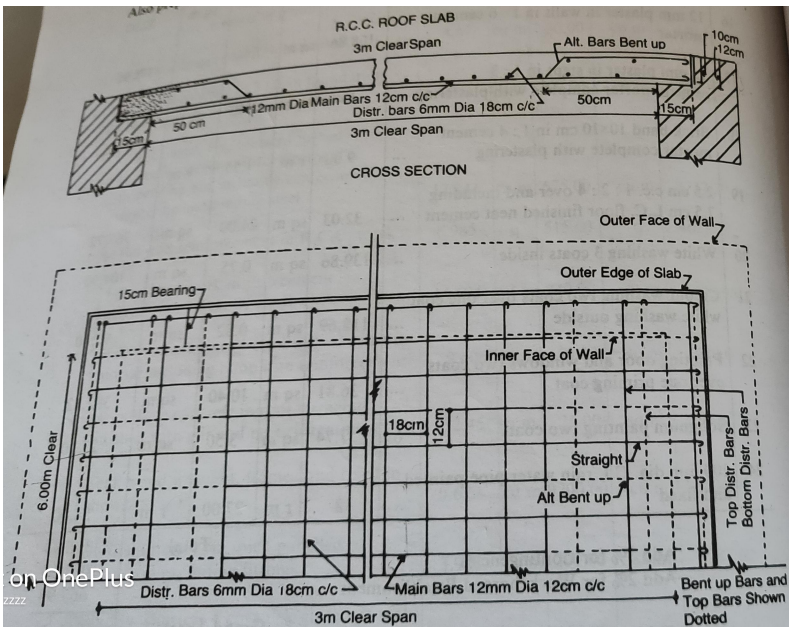
   For 1 cum, broken stone 1m^3@ 1100/ m^3, river sand 0.48 m^3@1200/ m^3, cement 172 kg@ 5000/ton, mason 0.7/ m^3@ 450/person, man 0.35 m^3 250/no. 10 marks (KTU JULY 2019)

MODULE –III

1. Estimate the quantities of the items of the following items of a residential building
    a. Earth work excavation in foundation
    b. First class brick work in foundation
    c. Lime concrete in foundation
    d. Brick work in super structure
    e. Dam proof course
    f. Plastering in walls 20 marks (KTU DEC 2019)



2. Work out the quantites of steel in a RCC roof slab shown in figure. Also prepare bar bending schedule 20 marks (KTU JULY 2019)



3. Prepare the detailed estimate of RCC beam of 8m clear span and 75x40 cm in section from

the given figure. Also prepare a schedule of rates 20 marks(KTU DEC 2018)

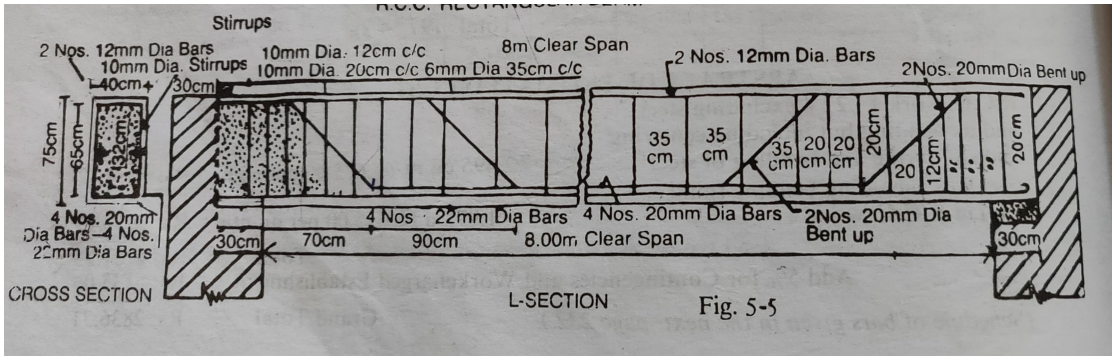
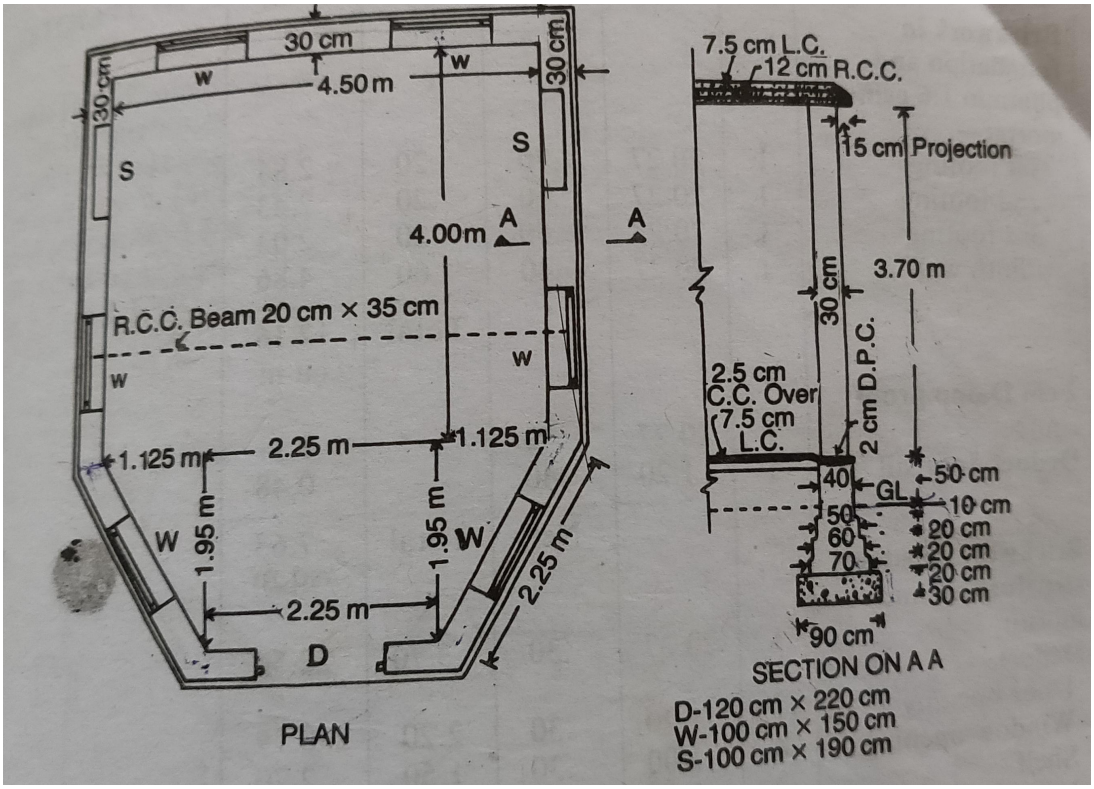
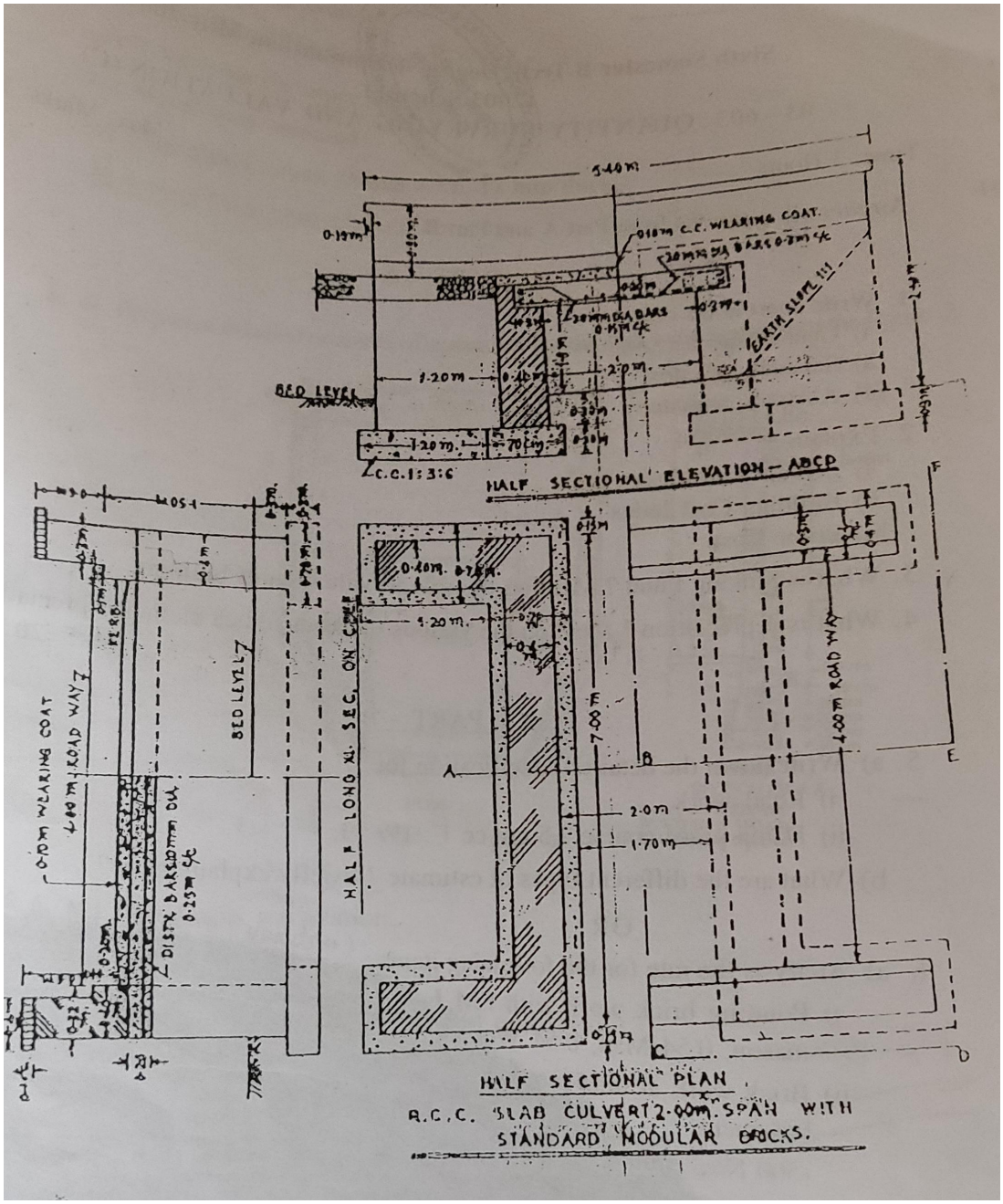


Fig. 5-5

4. Estimate the quantities of the items of the following items of a residential building
    a. Earth work excavation in foundation
    b. First class brick work in foundation
    c. Lime concrete in foundation
    d. Brick work in super structure
    e. Dam proof course
    f. Plastering in walls 20 marks(KTU JULY 2019)



5. Calculate the quantities of following items of work for a single span RCC slab culvert as shown in figure 20 marks(KTU MAY 2019)



6. Prepare the detailed estimate of RCC column with foundation footing from the given figure. Also prepare bar bending schedule 20 marks(KTU DEC 2019)

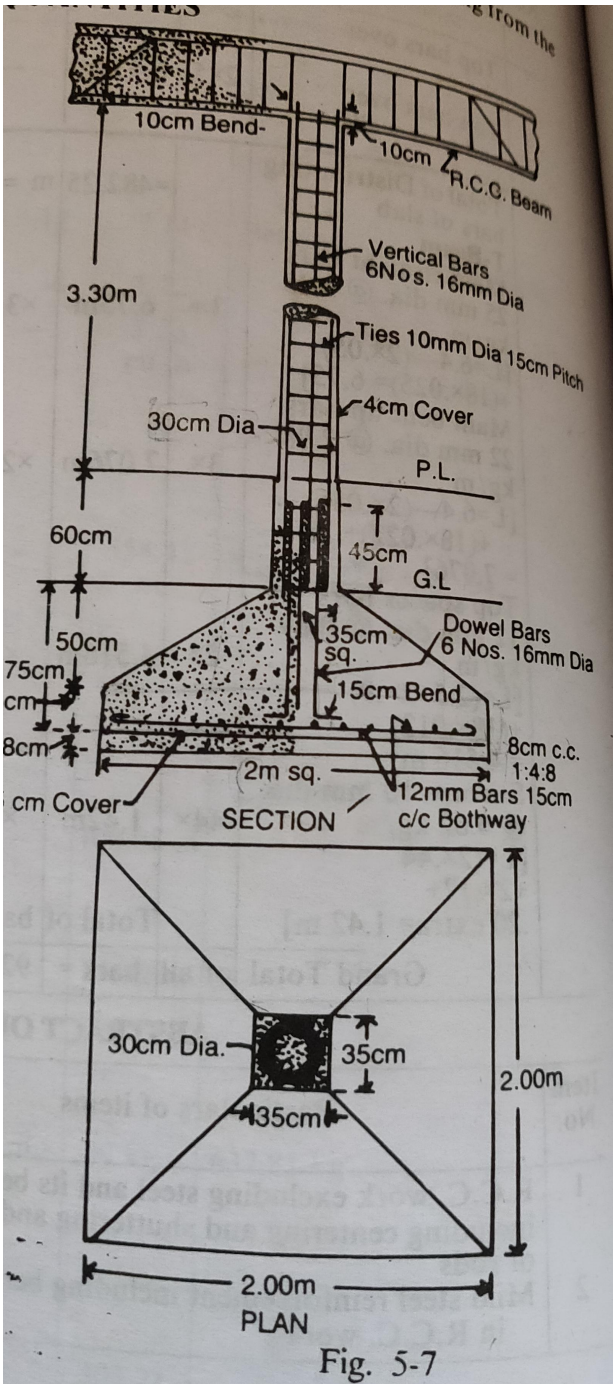


Fig. 5-7

7. Prepare the detailed estimate of RCC retaining wallof 30m span from the given figure. Also prepare bar bending schedule 20 marks(KTU SEP 2020)

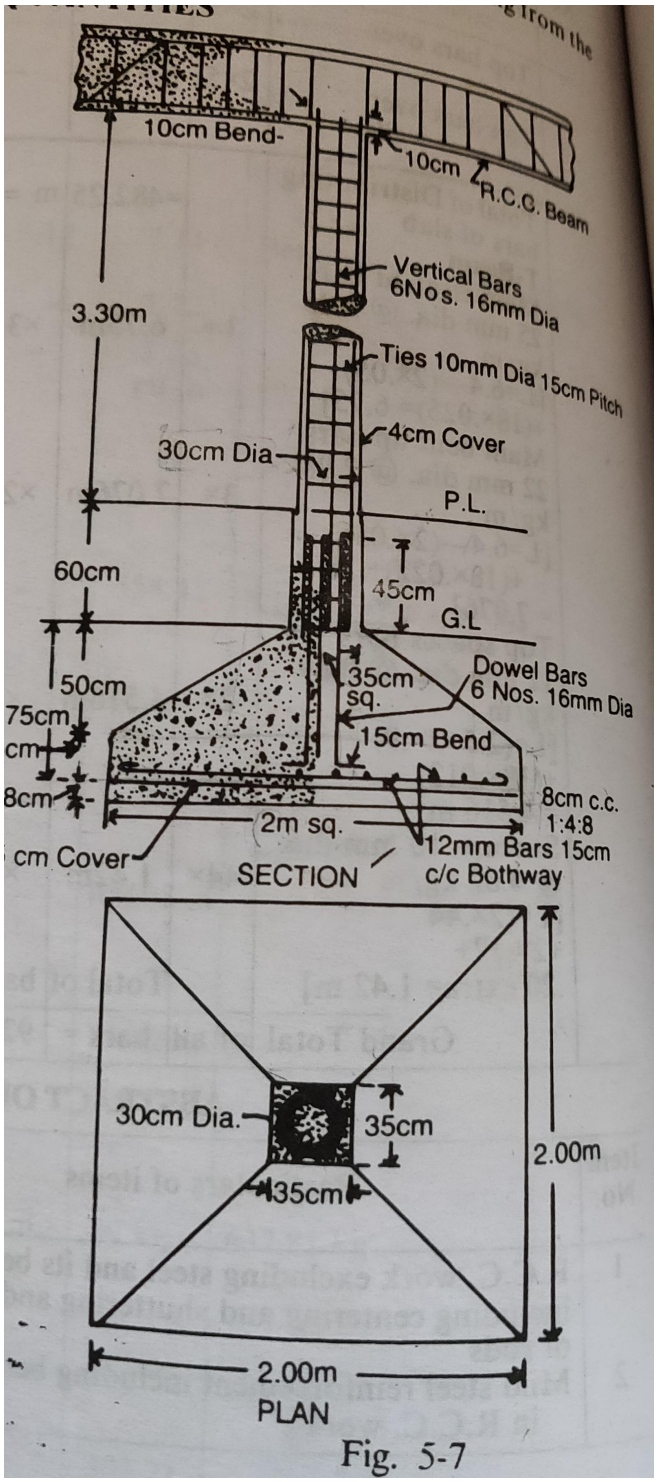
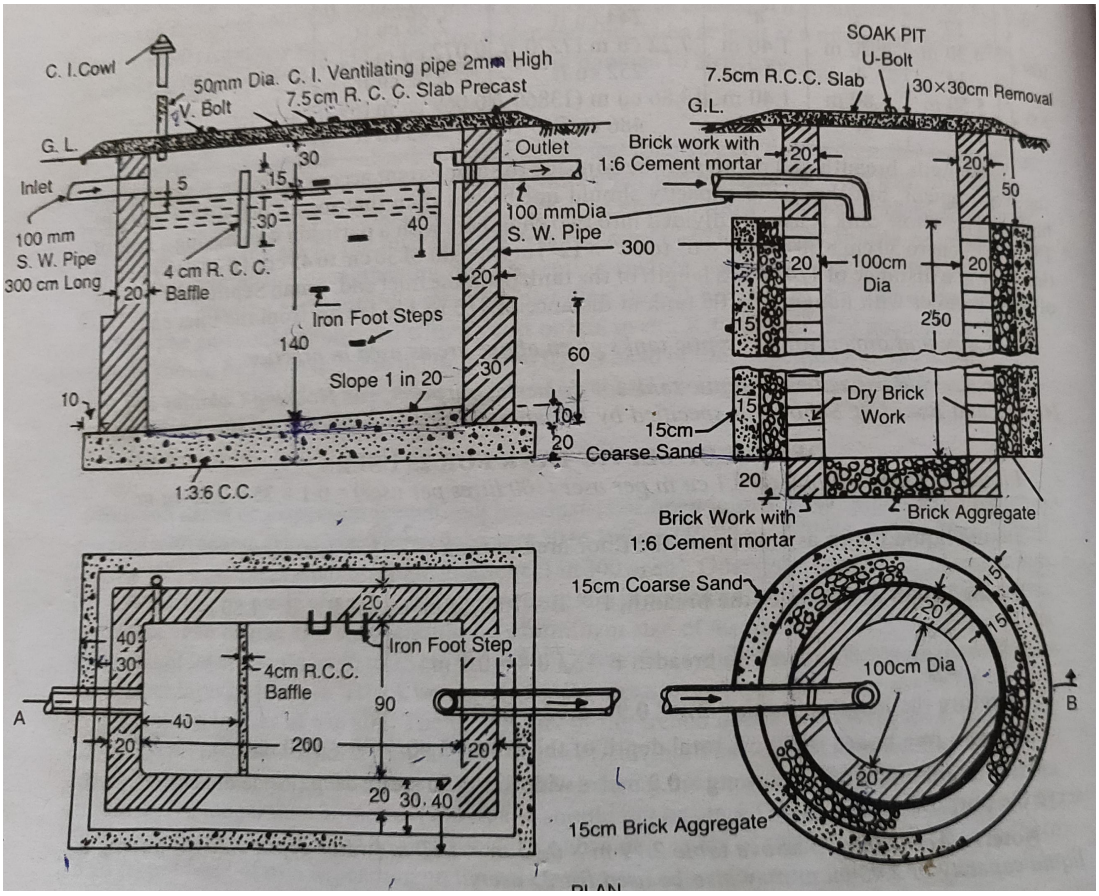


Fig. 5-7

8. Prepare the detailed estimate of septic tank with soak pit from the given figure



20 marks(KTU SEP 2020)

MODULE –IV

1. What do you understand by the following

   1.Out goings

   2.Year's purchase (5 marks)(KTU DEC 2019)

2. An old building has been purchased by a person at a cost of 30000 excluding the cost of the land. Calculate the amount of sinking fund at 4% interest assuming there further life of the building as 20 years and the scrap value of the buildings as 10% of the cost of purchase (15 marks)(KTU DEC 2019)

3. It is estimated that the capitalised value of a property is 10 lakhs including water supply, sanitary, electrical installations and the value of the land. if the rate of interest is 6% what shall be the net return from the property? Assume the outgoing to be 10% of the gross income, find the expected rent of the property per month. 20 marks(KTU SEP 2020)

4. What are out goings enumerate the different types of out goings? 15 marks(KTU DEC 2018)

5. Write short notes on

   1. sinking fund

   2. Scrap value 5 marks(KTU DEC 2019)

6. What is depreciation? Explain the various methods to calculate depreciation? 20 marks

7.Write short notes on

   a. Salvage value
   b. Obsolescence
   c. Freehold and lease hold property
   d. Book value
   e. Gross income and net income 20 marks(KTU DEC 2019)

8.What you meant by valuation. What is the purpose of valuation?10 marks(KTU JULY 2019)

9. Explain briefly about the types of valuation of a building ? 10 marks(KTU SEP 2020)

10.Cost of a plot is RS. 60000 and a building costing 250000 have been constructed over it. The building consist of two flats. The owner of the flats expects 12% return on the cost of construction and 8% on the cost of the land. Work out the standard rent for each flat of the building. Life of the building is 75 years. Assume

   f. Cost of annual repair 1.5% of the cost of construction
   g. Other outgoings 25% of the net return on the building
   h. Sinking fund interest 4%. 20 marks(KTU DEC 2019)

VIDYA ACADEMY OF SCIENCE & TECHNOLOGY

TECHNICAL CAMPUS, KILIMANOOR

(A Unit of Vidya International Charitable Trust)

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DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK

CET. 458SUSTAINABLE CONSTRUCTION

MODULE I

Sl.No	Questions	Mark	
1	Define the term Green Building.	3	Model Question
2	Discuss any one sustainability indicator	3	Model Question
3	What is EIA? Explain its significance	3	Model Question
4a.	What is embodied energy? Explain its significance.	5	Model Question
b.	What is embodied energy? Explain its significance.	9	Model Question
5a.	Explain the features of green buildings.	5	Model Question
b.	Describe the methods for estimation of carbon foot print.	9	Model Question
6	State advantages of Green building over traditional building	12	Model Question
7	Explain any six green building materials.	12	Model Question
8	Explain principles of green building.	10	Model Question
9	Explain salient features of green building	10	Model Question
10	Write short notes on the following a) Life cycle analysis b) Green building	10	Model Question
11	Define Sustainability. Write a short note on the need of sustainability.	8	Model Question
12	Explain sustainability with respect to social, economical, environmental concept.	12	Model Question
13a	Define Sustainable Development.	5	Model Question
B	Write a short note on Embodied Energy and Ecological Footprint	10	Model Question
14	Define Global warming and state the reasons. Describe the major impacts and responses to Global Warming	15	Model Question
15	Explain the formation of Brundtland Commission and the terms and references for the Commission. State and describe the major sections of Brundtland Commission report.	14	Model Question

16	Explain in detail about advantages and short comings of green buildings.	10	Model Question
17	Describe the features of sustainability indicators	5	Model Question
18	What is environmental impact assessment? Why is EIA important for sustainability?	14	Model Question
19	What are the objectives and benefits of EIA?	7	Model Question
20	What is carbon credit? Explain in not more than five sentences.	10	Model Question
21	Explain the significance of carbon footprint. Suggest two methods to reduce the carbon footprint in your house	14	Model Question
22	Describe various steps for carrying out the environmental impact assessment of mass housing project.	12	Model Question
23a	State Benefits of Environmental impact assessment.	8	Model Question
b	Explain the steps in environmental impact assessment process.	12	Model Question

MODULE II

Sl.No	Questions	Mark	
1	Define eco blocks	3	Model Question
2	Enumerate the properties of wood-based materials that make it sustainable	3	Model Question
3a.	Discuss the initiatives of GRIHA in alternative materials development.	5	Model Question
b.	List out the various types of agro and industrial wastes and explain their properties	9	Model Question
4	Discuss any five sustainable materials that can be made from utilization of wastes.	5	Model Question
5	Elaborate the steps involved in manufacturing of stabilized mud blocks.	9	Model Question
6	Explain any six green building materials	12	Model Question
7	List any four green building materials.	4	Model Question
8	Explain the properties and uses of sustainable building materials	10	Model Question
9	Discuss the role of various Govt and non-Govt organizations in promoting sustainable building materials	14	Model Question
10	Write detailed notes on eco-friendly materials for green buildings	8	Model Question
11	Explain the application of waste materials in building construction	10	Model Question

12	Write short notes on the following (i) Lato blocks (ii) Concrete building blocks (ii) Stone masonry blocks	10	Model Question
13	What is mud stabilization? Explain the different stabilization techniques for mud	10	Model Question
14	Explain the application of locally available materials in building construction	3	Model Question
15	What is mud stabilization	3	Model Question
16	Write short notes with neat sketches on Stabilized soil blocks	5	Model Question
17	Write short notes on cellular clay blocks	3	Model Question
18	Define prefabrication.	3	Model Question
19	What are the major processes of Recycling of used materials in to new products? Explain on five major types of recyclables in building construction.	15	Model Question
20	Write short note on a) insulated concrete forms b) hydra form c) cellulose insulation	15	Model Question
21	List out the non toxic materials used in construction. Explain any two in detail.	10	Model Question
22	Discuss the initiatives of CSIR and HUDCO in alternative materials development.	10	Model Question

MODULE III

1	Explain pre-engineered building construction	3	Model Question
2	Differentiate between ferrocement and ferro-concrete	3	Model Question
3a	Draw the plan of odd and even courses of a corner wall comprising rat trap bond.	5	Model Question
b	List out the merits and demerits of Mivan construction technique.	9	Model Question
4a	Explain the concept of filler slab roofing systems.	7	Model Question
b	Discussthe role of Habitat in propagating cost-effective constructions.	7	Model Question
5	What is ferro-concrete?	3	Model Question
6	Explain the alternative technologies used in green building.	8	Model Question
7	What is Straw bale construction?	3	Model Question
8	Write short notes on rat trap bond masonry	5	Model Question
9	List out the merits and demerits of prefabricated construction.	5	Model Question
10.a	What is ferrocement construction?	5	Model Question

b	What is Cob construction?	5	Model Question
11	Explain the applications of bamboo in building construction	10	Model Question
12	Explain the various methods to be considered to achieve cost reduction in building process	10	Model Question
13	Explain the various innovative roofing techniques with the help of neat sketches	10	Model Question
14	Explain filler slab	6	Model Question
15	What is funicular shells roofing system?	6	Model Question
16	State the advantages of hollow concrete blocks.	5	Model Question
17	Describe Brick arch foundation with neat sketches	10	Model Question
18	What is ferro-cement? Explain the application of ferro-cement in building	10	Model Question
19	Discuss the contribution of Nirmithikendra in sustainable building constructions.	10	Model Question
20	Discuss the contribution of Coastford in sustainable building constructions.	10	Model Question

MODULE IV

1	Discuss the role of NBC in sustainable building construction	3	Model Question
2	Describe net zero building	3	Model Question
3a	Describe green building features based on a residential case study.	5	Model Question
B	Compare the rating frameworks of LEED and GRIHA	9	Model Question
4a	What are the applications of building integrated photo voltaics?	5	Model Question
B	Discuss the features of energy efficient buildings based on (i) institutional case study (ii) commercial case study	9	Model Question
5	Explain the possibilities of non conventional energy sources.	10	Model Question
6	Describe the need for the Energy Conservation.	10	Model Question
7a	Discuss the relevance of energy efficient technologies in HVAC systems.	10	Model Question
b	Elucidate the role of designing according to the climate.	10	Model Question
8	Explain LEED and GRIHA with the help of suitable examples.	10	Model Question
9	What is GRIHA?	5	Model Question

10	Explain the concept of LEED with the help of examples	10	Model Question
11a	Define the term LEED.	5	Model Question
b	What is purpose of green rating system and explain its objectives?	8	Model Question
12	How the climate design in green buildings can be conducted?	8	Model Question
13	Explain about any fully solar energy based building in India.	8	Model Question
14	Explain the passive cooling techniques in green buildings	8	Model Question
15	Define passive cooling.	5	Model Question
16	What are non conventional energy resources?	5	Model Question
17	State different rating systems for Green building.	8	Model Question
18	Explain environmental design (ED) strategies for Green building construction	10	Model Question
19	Explain the strategies you will follow to convert conventional building into Green building	12	Model Question
20	Explain salient provisions used in IGBC green rating system.	12	Model Question
21	Explain in brief Green building rating system BEE adopted in the country.	12	Model Question

MODULE V

1	What are the benefits of BIM?	3	Model Question
2	List the components of building automation system	3	Model Question
3a	Enumerate the role of building automation in energy conservation	5	Model Question
b	Describe the implementation of BIM in construction scheduling.	9	Model Question
4a	Illustrate the application of building automation in water conservation	5	Model Question
b	Explain the process of BIM in cost optimisation.	9	Model Question
5	Explain the concepts and benefits of BIM	8	Model Question
6	Explain the applications of BIM in construction management	10	Model Question
7	What are the applications of automation for functional efficiency of buildings	10	Model Question
8	What is the role of ICT in sustainable development?	8	Model Question
9	Explain the concepts of building automation.	5	Model Question
10	Explain the components of building automation system	10	Model Question
11	Explain BIM.	3	Model Question

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QUESTION BANK
CET436 TRANSPORTATION PLANNING

MODULE 1			
SL.NO	**QUESTIONS**	**MARK**	
1	What are the characteristics of urban travel?	14	MODEL
2	Explain the role of urban activity analysis in transportation planning?	14	MODEL
3	How transportation and land use are interrelated	3	MODEL
4	Draw the directional type urban structure and state its characteristics	14	MODEL
5	Discuss the impacts of transportation on environment	10	MODEL
6	Write short notes on Hierarchy of transportation facilities	14	MODEL
7	What are the problems and challenges faced in transportation planning	6	KTU Sep 2020
8	Explain with the help of a figure the relation between movement and accessibility	7	KTU Sep 2020
9	Write a short note on detrimental effect of transportation on environment	5	KTU May 2020
10	Discuss the role of transportation in the development of a society	7	KTU Oct 2020
MODULE 2			
1	List the broad categories of urban demand classification.	3	MODEL
2		3	MODEL
3	Discuss the factors affecting travel demand.	7	MODEL
4	What are the basic principles and assumptions in demand analysis?	7	MODEL
5	Discuss the various stages in the transportation planning process with a flow chart	14	MODEL

6	Explain systems approach to transportation planning	4	MODEL
7	What are the constraints that arise in connection with the planning of urban transportation system	3	KTU Oct 2019
8	Compare the activity-based approach and trip-based approach in transportation planning	8	KTU Oct 2019
9	Explain systems approach to transportation planning?	7	KTU Sep 2019
10	What are the goals and objectives in transport planning. Give examples	8	KTU may 2020
MODULE 3			
1	List out the need for sampling of data.	3	MODEL
2	What are the three basic factors which affects trip generation	3	MODEL
3	Discuss the various sampling techniques and their suitability	10	MODEL
4	How can you estimate trip generation by expansion factor	4	MODEL
5	Compare the multiple regression analysis and category analysis for predicting trip generation.	10	MODEL
6	What are the assumptions made in Multiple Linear Regression analysis	4	September 2020
7	Briefly explain the different data collection techniques used in inventory surveys	7	September 2020
8	What are the advantages and disadvantages of category analysis?	6	September 2020
9	Write short notes on factors affecting trip generation		MODEL
10			
MODULE 4			
1	What are the assumptions in growth factor models?	3	MODEL
2	What are diversion curves?	3	MODEL
3	What is the concept behind Gravity model? Explain the step by step procedure for the calibration of Gravity model	10	MODEL

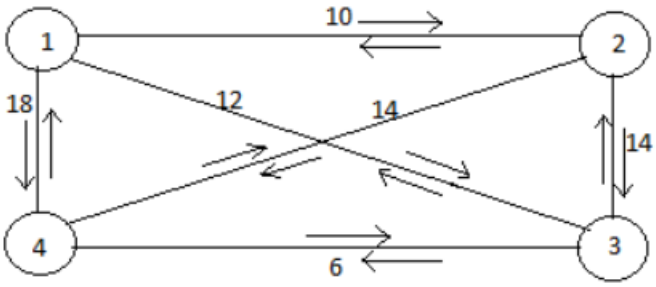
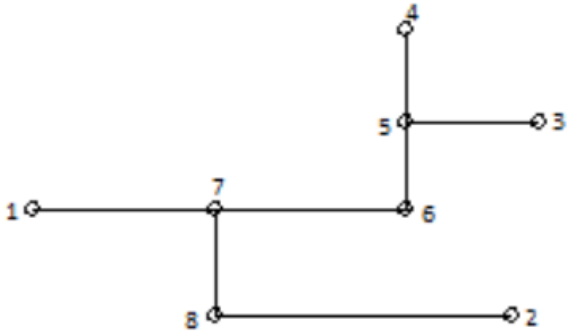
<table>
<tr><td>4</td><td>Explain the capacity restraint assignment technique</td><td>4</td><td>MODEL</td></tr>
<tr><td></td><td>Estimate the future trip matrix by Furness method if the present trip matrix and future trip production/ attraction are as follows
<table>
<tr><td>Orgin</td><td colspan="4">Destination</td><td>Future Trip Generation</td></tr>
<tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td><td></td></tr>
<tr><td>A</td><td>8</td><td>3</td><td>8</td><td>10</td><td>32</td></tr>
<tr><td>B</td><td>5</td><td>8</td><td>9</td><td>6</td><td>42</td></tr>
<tr><td>C</td><td>15</td><td>16</td><td>3</td><td>8</td><td>147</td></tr>
<tr><td>D</td><td>12</td><td>7</td><td>4</td><td>2</td><td>30</td></tr>
<tr><td>Future trip attraction</td><td>68</td><td>24</td><td>39</td><td>120</td><td></td></tr>
</table></td><td>10</td><td>MODEL</td></tr>
<tr><td>5</td><td>Compare trip interchange and trip end mode split models</td><td>4</td><td>MODEL</td></tr>
<tr><td>6</td><td>Explain the different types of modal slit models?</td><td>10</td><td>MODEL</td></tr>
<tr><td>7</td><td>Generate an O/D matrix using the given network and calculate the trip generation.


Fig.1</td><td>4</td><td>KTU Sep 2020</td></tr>
<tr><td>8</td><td>Using figure 1, distribute the future trips using Furness method, given the estimated future trips for zones 1, 2, 3 and 4 as 80, 114, 48 and 38 respectively. (Two iterations)</td><td>10</td><td>KTU Sep 2020</td></tr>
<tr><td>9</td><td>Write a detailed note on the purposes of traffic assignment</td><td>8</td><td>KTU Sep 2020</td></tr>
<tr><td>10</td><td>Assign traffic from zone 1 to 2, 3 and 4 in the following manner using all-ornothing assignment</td><td>12</td><td>KTU Sep 2020</td></tr>
</table>

<table>
<tr><td></td><td>and find the volume on the links
<table><tr><th>From</th><th>To</th><th>Traffic volume (veh/hour)</th></tr><tr><td>1</td><td>2</td><td>2500</td></tr><tr><td>1</td><td>3</td><td>3000</td></tr><tr><td>1</td><td>4</td><td>4000</td></tr></table> 
</td><td></td><td></td></tr>
<tr><td>11</td><td>Define traffic assignment. How it is different from trip distribution?</td><td>4</td><td>KTU Oct 2019</td></tr>
<tr><td>12</td><td>Describe All or Nothing assignment with an example</td><td>6</td><td>KTU May 2019</td></tr>
<tr><td colspan="4">MODULE 5</td></tr>
<tr><td>1</td><td>What are the criteria for selection of land use transport model?</td><td>3</td><td>MODEL</td></tr>
<tr><td>2</td><td>What is the importance of sustainable transportation?</td><td>3</td><td>MODEL</td></tr>
<tr><td>3</td><td>What are the objectives of comprehensive mobility plan?</td><td>7</td><td>MODEL</td></tr>
<tr><td>4</td><td>Discuss how transport demand management measures can reduce congestion.</td><td>8</td><td>MODEL</td></tr>
<tr><td>5</td><td>Discuss briefly the quick response techniques for travel demand estimation.</td><td>6</td><td>MODEL</td></tr>
<tr><td>6</td><td>Write short note on transportation demand management</td><td></td><td></td></tr>
<tr><td>7</td><td>Write short note on application of GIS in transportation planning</td><td>3</td><td>MODEL</td></tr>
<tr><td>8</td><td>Explain quick response techniques.</td><td>10</td><td>KTU May 2019</td></tr>
<tr><td>9</td><td>Explain transport solutions for non-transport</td><td>10</td><td>KTU May 2019</td></tr>
</table>

	problems.		
10	List out and explain the considerations in selecting land use transportation models.	10	KTU Sep 2019
11	With the help of a flow chart, show the use of Lowry land use transport model for urban structure analysis. Also list out the three principal components of urban area related to Lowry model.	10	KTU Sep 2019

ELECTIVE: CET 464 AIR QUALITY MANAGEMENT (QUESTION BANK)			
Module – 1			
Sl.No.	**Question**	**Marks**	**Question Paper**
1.	What are the criteria air pollutants?	5	KTU Dec 2018 (2015 Scheme)
2.	Define air pollution	8	KTU DEC 2019 (2015 Scheme)
3.	Explain green house effect.	7	KTU DEC 2019 (2019 Scheme)
	Give a classification of the different types of air pollutants based on different criteria with suitable examples.	7	
4.	Explain major air pollution episodes.	9	
5.	What are the different industrial processes causing pollution	3	
6.	Explain major air pollution episodes.	10	KTU Sep 2020
7.	Explain primary and secondary air pollutant with example.	6	KTU Sep 2020
8.	Explain components of atmosphere.	5	KTU Sep 2020

Module – 2			
1.	Discuss the effects of indoor air pollutants	7	KTU DEC 2019 (2015 Scheme)
2.	Discuss the effects of air pollutants on human health	7	KTU DEC 2019 (2015 Scheme)
3.	Describe the effect of air pollution on environment.	9	KTU APR 2018 (2015 Scheme)
4.	Write a short note on effect of air pollution on vegetation	5	KTU APR 2018 (2015 Scheme)
5.	Explain effect of carbon monoxide on human health.	4	KTU APR 2018 (2015 Scheme)
6.	What are the sources of indoor air pollution?	3	
7.	Explain effect of air pollution on human health and plants.	8	KTU Sep 2020

Module – 3			
1.	a) Enumerate the assumptions in Gaussian plume model. b) Define inversion .Explain different types of inversion.	5 10	KTU Sep 2020
2.	Explain Pasquill's stability curves.	3	KTU DEC 2019 (2015 Scheme)
3.	a) Explain the causes and effects of different types of inversions. b) Classify and compare the atmosphere based on different stability conditions.	6 6	
4.	Explain temperature lapse rate	7	
5.	Explain with neat sketches various plume behavior. Write short note on atmospheric stability	10 5	KTU Sep 2020
6.	Explain the effect of meteorological factors on dispersion of air pollutant.	9	KTU Sep 2020
7.	Explain advantages and disadvantages of Gaussian plume model.	6	KTU Sep 2020
8.	What do you mean by Lapse rate? Explain the three types of lapse rate Describe how atmospheric temperature changes with pressure.	4 4	KTU MAY 2019 (2015 Scheme)

Module – 4			
1.	Briefly explain Emission Inventory.	5	KTU DEC 2019 (2015 Scheme)
2.	Explain the different methods for the collection of gaseous air pollutants.	8	KTU DEC 2019 (2015 Scheme)
3.	Explain various methods used for the sampling of particulate air pollutants.	10	KTU MAY 2019 (2015 Scheme)
4.	Explain the devices used for sampling gases and vapours	8	KTU MAY 2019 (2015 Scheme)
5.	Describe the various control methods for the removal of gaseous pollutants.	15	KTU DEC 2019 (2015 Scheme)
6.	Discuss National Ambient Air Quality Standards.	5	KTU DEC 2019 (2015 Scheme)

Module – 5			
1.	Write short notes on scrubbing.	3	KTU DEC 2019 (2015 Scheme)
2.	List the different methods for controlling the particulate air pollutants.	3	KTU DEC 2019 (2015 Scheme)
3.	Explain the working of an Electrostatic precipitator for particulate emission control.	10	KTU DEC 2019 (2015 Scheme)
4.	Explain various methods used for the control of particulate air pollutants.	9	KTU MAY 2019 (2015 Scheme)
5.	Discuss the advantages and disadvantages of scrubbers	10	KTU MAY 2019 (2015 Scheme)
6.	Explain the different methods for controlling gaseous emission		

QUESTION BANK

CET 434 RAILWAY AND TUNNEL ENGINEERING

No:	Questions	Year	Marks
	MODULE 1		
1	List and define the component parts of a railway track	Dec 18	5
2	Explain the functions and requirements of rails	Dec 18	10
3	What is the equilibrium cant on a 20 curve on a BG track, if the speed of various trains are 10 trains at 50kmph., 8 trains at 55 kmph. and 4 trains at 60kmph. Respectively	Dec 18	5
4	Explain the various type of gradient used on railway track? What is grade compensation and why is it necessary?	Dec 18	10
5	Explain the term ballast less tracks and explain its advantages	Dec 18	4
6	Enumerate the role of Indian railways in National development	Dec 19	6
7	What are the factors affecting the selection of gauges?	Dec 19	5
8	Describe the functions and requirements of sleepers	Dec 19	10
9	What is meant by Super elevation? What are the objects of providing SE on curves?	Dec 19	5
10	What is creep? What are the various causes of creep? List the various remedial measures	Dec 19	10
11	Compare and differentiate the different types of rails with neat sketches.	Dec 19	6
12	A 60 curve diverges from a 40 main curve in reverse direction in the layout of a B.G. track. Speed on branch line is restricted to 35 kmph. Determine the restricted speed on main line.	Sep 20	10
13	If the ruling gradient is 1 in 150 on a particular section of Broad Gauge track and at the same time a curve of 4 degree is situated on this ruling gradient, what should be the allowable ruling gradient?	Sep 20	5
14	Sketch the typical cross-section of a railway track	Sep 20	5
15	What is coning of wheels? Why is it necessary?	Sep 20	5
16	Discuss any five factors affecting the selection of a good alignment of a railway track.	Sep 20	5
	MODULE 2		
1	What are the different types of signals according to location? Illustrate with the help of neat sketch	Dec 18	5
2	How are railway stations classified? Explain each with neat sketches	Dec 18	10
3	Explain scissors crossover with neat sketch	Dec 18	
4	What are the different systems of controlling the movement of trains? Explain the working of absolute block system.	Dec 18	10
5	Draw a neat sketch of a Left hand turnout and mark its components.	Dec 18	6
6	Explain different types of railway signals according to their operational characteristics. With the help of neat sketch explain the essential features and	Dec 19	10

	working principle of a Semaphore type signal.		
7	Draw a neat sketch of a Right hand turnout and mark its components.	Dec 19	5
8	What is a yard? What are the different types of yards? Explain the functions of a Marshalling yard and describe the points to be considered in its design.	Dec 19	10
9	List out the different types of functional signals. Discuss in detail the working of any one signal with neat sketch	Sep 20	7
10	What is the purpose of providing marshalling yards? What are the main siding features of marshalling yards? Support your answers with appropriate figures.	Sep 20	8
	MODULE 3		
1	Discuss on Conventional and Advanced Remedial Aids for preventing railway accidents	Dec 18	4
2	Explain how the accidents are classified on Indian Railways	Dec 18	5
3	Explain about any four advanced technical remedial aids or measures for prevention of railway accidents	Dec 19	8
4	On a straight B.G. track, a turnout takes off at an angle of 60 42’ 35’’. Design the turnout if angle of switch is equal to 10 8 ’ 00’’, length of switch rails is 4.73 m, heel divergence is equal to 11.43 cm and straight arm is equal to 0.85 m.	Dec 19	7
5	Discuss about the maintenance and renewal of rails, sleepers and track fittings.	Sep 20	8
6	What is packing? Explain the three different types of packing	Sep 20	7
	MODULE 4		
1	List the various methods of tunnelling in hard and soft rocks. Explain in detail any one tunnelling methodemployed in hard strata and soft soil	Dec 18	10
2	Write down the procedure for constructing a tunnel in clayey soil. Explain its advantages.(Draw necessary diagrams)	Dec 18	10
3	What is an air lock? Describe the air lock method of tunnelling in soft soil	Dec 19	10
4	How is transferring of center line into the tunnel carried out? Explain with the help of neat diagram	Dec 19	10
5	Write down the procedure for constructing a tunnel in water bearing soil. Explain its advantages.(Draw necessary diagrams)	Sep 20	10
6	Explain the four different stages in setting out the centre line of tunnel.	Sep 20	10
	MODULE 5		
1	Write notes on (i) Lighting and Ventilation of tunnels (ii) Lining of tunnels	Dec 18	10
2	Explain the three systems of mechanical ventilation of a tunnel with neat	Dec 19	10

	sketch.		
3	List out different methods of tunnelling in hard rocks. Explain any one of the method.	Dec 19	10
4	Explain the dust control methods in tunneling	Sep 20	8
5	Explain the drainage process in tunnels	Sep 20	8