



**VIDYA ACADEMY OF SCIENCE AND TECHNOLOGY TECHNICAL
CAMPUS, KILIMANNOOR, THIRUVANANTHAPURAM - 695602
(Accredited by NAAC with 'B++' grade)**

Department of Civil Engineering

QUESTION BANK - S8

CET456 - Repair and Rehabilitation of Buildings

MODULE I

1.	List the various damages of masonry structures	KTU Oct 2023 QP	3 Marks
2.	Differentiate between retrofitting and rehabilitation.	KTU Oct 2023 QP	3 Marks
3.	Suggest any three methods for controlling cracks in buildings.	KTU Jun 2023 QP	3 Marks
4.	With a neat sketch, explain out-of-plane failure of masonry walls and mention how to prevent it?	KTU Jun 2023 QP	3 Marks
5.	Explain the various causes of cracking in concrete buildings.	KTU Oct 2023 QP	14 Marks
6.	Which are the possible ways by which damages to masonry buildings can be controlled?	KTU Oct 2023 QP	14 Marks
7.	Explain the various types of cracks in R C building.	KTU Jun 2023 QP	14 Marks
8.	Give a detailed account of the causes of damage in masonry structures.	KTU Jun 2023 QP	14 Marks

MODULE II

1.	How does rebound hammer test help in assessing quality of concrete?	KTU Oct 2023 QP	3 Marks
2.	What is proof load test? Why do we conduct it?	KTU Oct 2023 QP	3 Marks
3.	How does the ultrasonic pulse velocity (UPV) value relate to the quality of concrete? Illustrate the relation using the range of values for UPV.	KTU Jun 2023 QP	3 Marks
4.	Carbonation depth test is useful for ascertaining the corrosion resistance of concrete. Justify the statement.	KTU Jun 2023 QP	3 Marks
5.	a) Explain the test procedure for 1) Windsor Probe test 2) Pull out test b) What is the purpose of conducting half-cell potential test for reinforced concrete? Draw a schematic diagram for the test set up marking its component parts.	KTU Oct 2023 QP	8 Marks 6 Marks
6.	Outline the assessment procedure for a damaged structure using a flow chart and explain the various steps involved.	KTU Oct 2023 QP	14 Marks
7.	Explain the detailed procedure for core sampling and testing of existing concrete structures.	KTU Jun 2023 QP	14 Marks
8.	List the various corrosion potential assessment tests. Explain any two in detail.	KTU Jun 2023 QP	14 Marks

MODULE III

1.	Which are the external and internal factors affecting durability of concrete?	KTU Oct 2023 QP	3 Marks
2.	List the various surface preparation methods for repairing.	KTU Oct 2023 QP	3 Marks
3.	Explain the thermal properties of concrete.	KTU Jun 2023 QP	3 Marks
4.	What is the effect of thickness of concrete cover on durability of concrete?	KTU Jun 2023 QP	3 Marks
5.	Explain the major factors which cause corrosion to reinforcement in concrete	KTU Oct 2023 QP	14 Marks
6.	Explain the behavior of concrete at elevated temperature.	KTU Oct 2023 QP	14 Marks
7.	Explain rapid chloride permeability test, water permeability test, sorptivity test and oxygen permeability test for ascertaining the durability of concrete	KTU Jun 2023 QP	14 Marks
8.	a) Surface preparation is inevitable before any repair work. Explain how it is done for concrete surfaces. b) Explain the various aspects and components of quality assurance of concrete construction	KTU Jun 2023 QP	8 Marks 6 Marks

MODULE IV

1.	Differentiate between routine maintenance and preventive maintenance.	KTU Oct 2023 QP	3 Marks
2.	What is fibre reinforced concrete? Why do we prefer fibre reinforced concrete as a repair material than ordinary concrete?	KTU Oct 2023 QP	3 Marks
3.	Differentiate between self-compacting concrete and self-healing concrete.	KTU Jun 2023 QP	3 Marks
4.	What is polymer concrete?	KTU Jun 2023 QP	3 Marks
5.	Write short notes on: 1) Shotcreting and guniting 2) High performance concrete 3) Geopolymer concrete 4) Reactive powder concrete	KTU Oct 2023 QP	3 Marks 4 Marks 4 Marks 3 Marks
6.	a) Enumerate the desirable properties of repair materials b) Explain the various types of protective coating for reinforcement	KTU Oct 2023 QP	6 Marks 8 Marks
7.	a) Write detailed notes of (1) Expansive cement (2) Vacuum concrete (3) Sulphur infiltrated concrete (4) FRP sheets	KTU Jun 2023 QP	3 Marks 4 Marks 4 Marks 3 Marks
8.	a) Explain (1) Preventive maintenance (2) Remedial maintenance (3) Routine maintenance (4) Special maintenance b) Elucidate the methodology for selecting the repair materials.	KTU Jun 2023 QP	8 Marks 6 Marks

MODULE V

1.	Explain cathodic protection of reinforcement bars.	KTU Oct 2023 QP	3 Marks
2.	Differentiate between explosive and non-explosive demolition techniques. List any two equipments used for non-explosive demolition.	KTU Oct 2023 QP	3 Marks
3.	Explain with a neat sketch, how stitching of cracks is carried out	KTU Jun 2023 QP	3 Marks
4.	What is the purpose of corrosion inhibitors? Give an example for corrosion inhibitor.	KTU Jun 2023 QP	3 Marks
5.	a) Explain any three types of column jacketing with neat figures b) Explain shoring and underpinning	KTU Oct 2023 QP	9 Marks 5 Marks
6.	a) How will you restore fire damaged structural components? b) Write short notes on (1) Wrecking ball method (2) Concrete sawing (3) Hydraulic crusher	KTU Oct 2023 QP	8 Marks 6 Marks
7.	a) Explain the rehabilitation procedure for foundation b) What is overlay? What is its purpose?	KTU Jun 2023 QP	8 Marks 6 Marks
8.	a) How will you carry out routine maintenance to prevent leakage of roof? b) Explain implosion by delayed detonation technique.	KTU Jun 2023 QP	7 Marks 7 Marks



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QUESTION BANK

CET 464 - AIR QUALITY MANAGEMENT			
Module – 1			
Sl. No.	Question	Marks	Question Paper
1.	a) What is greenhouse effect and how does it contribute to climate change? b) Define air pollution and identify the major sources of air pollution	3 3	KTU June 2023 (2019 Scheme)
2.	a) Explain the criteria pollutants and their sources. b) Describe the health effects of exposure to ozone and sulphur dioxide.	8 6	KTU June 2023 (2019 Scheme)
3.	Explain the history of air pollution episodes and their impact on public health and the environment		
4.	a) What is air pollution? b) Name three sources of indoor air pollutants.	3 3	KTU Oct 2023 (2019 Scheme)
5.	Give a classification of the different types of air pollutants based on different criteria with suitable examples	7	KTU Oct 2023 (2019 Scheme)
6.	What are the criteria air pollutants?	5	KTU Dec 2018 (2015 Scheme)
7.	Explain greenhouse 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	
8.	What are the different industrial processes causing pollution	3	
9.	Explain primary and secondary air pollutant with example.	6	KTU Sep 2020
10.	Explain components of atmosphere.	5	KTU Sep 2020

Module – 2			
1.	What are the National Ambient Air Quality Standards (NAAQS)?	3	KTU Oct 2023 (2019 Scheme)
2.	What is the greenhouse effect and how does it contribute to climate change?	3	KTU Oct 2023 (2019 Scheme)
3.	Discuss the effects of indoor air pollutants	7	KTU Oct 2023 (2019 Scheme)
4.	Discuss the effects of air pollutants on human health	7	KTU Oct 2023 (2019 Scheme)

5.	Describe the effect of air pollution on environment.	9	KTU Oct 2023 (2019 Scheme)
6.	Write a short note on effect of air pollution on vegetation	5	KTU Oct 2023 (2019 Scheme)
7.	Explain effect of carbon monoxide on human health.	4	KTU APR 2018 (2015 Scheme)
8.	What are the sources of indoor air pollution?	3	
9.	Explain effect of air pollution on human health and plants.	8	KTU Sep 2020

Module – 3

1.	Enumerate the assumptions in Gaussian plume model. 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.	Explain the causes and effects of different types of inversions. 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)
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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 402-QUANTITY SURVEYING AND VALUATION
S8 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 m³. 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)

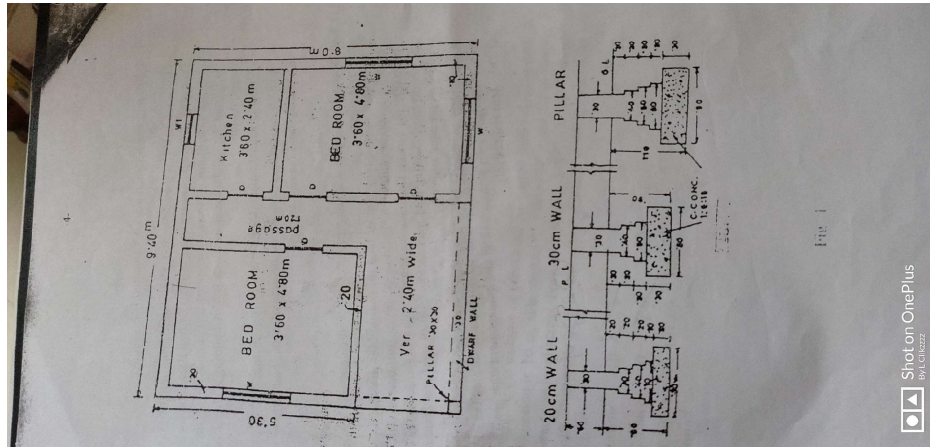
Material	Quantity	Rate
Rubble	20 cu.m	400/cu.m
Sand	5 cu.m	600/cu m
Cement	25 bags	550/ton
Mason	4.5 men	850/men
Men	9	650/no

4. Work out unit rate for RR masonry for foundation in cement & motor 1:6
For 1 cum, rubble 1m³@ 600/ m³, river sand 0.3 m³@1200/ m³, cement 72 kg@ 5000/ton,
mason 0.7/ m³@ 450/person, man 0.35 m³ 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)

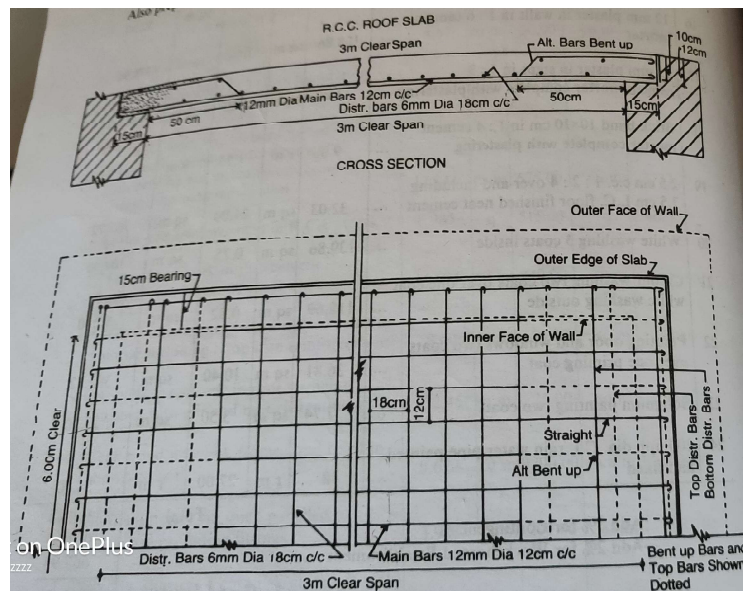
For 1 cum, broken stone 1m³@ 1100/ m³, river sand 0.48 m³@1200/ m³, cement 172 kg@
5000/ton, mason 0.7/ m³@ 450/person, man 0.35 m³ 250/no. 10 marks (KTU JULY 2019)

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)



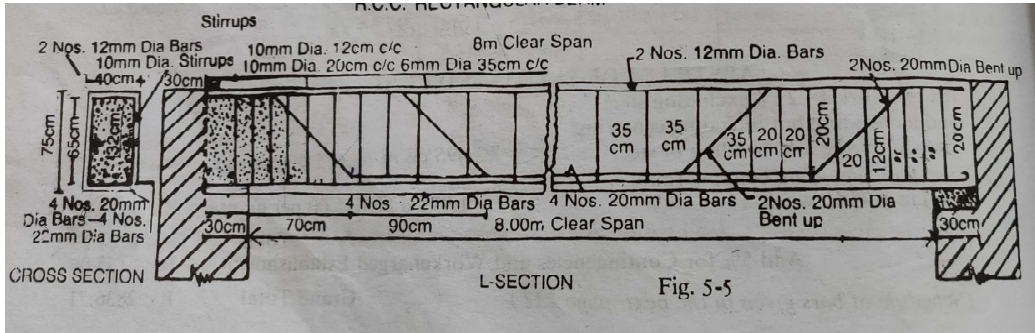
2. Work out the quantities of steel in a RCC roof slab shown in figure. Also prepare bar bending schedule
- 20 marks (KTU JULY 2019)



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

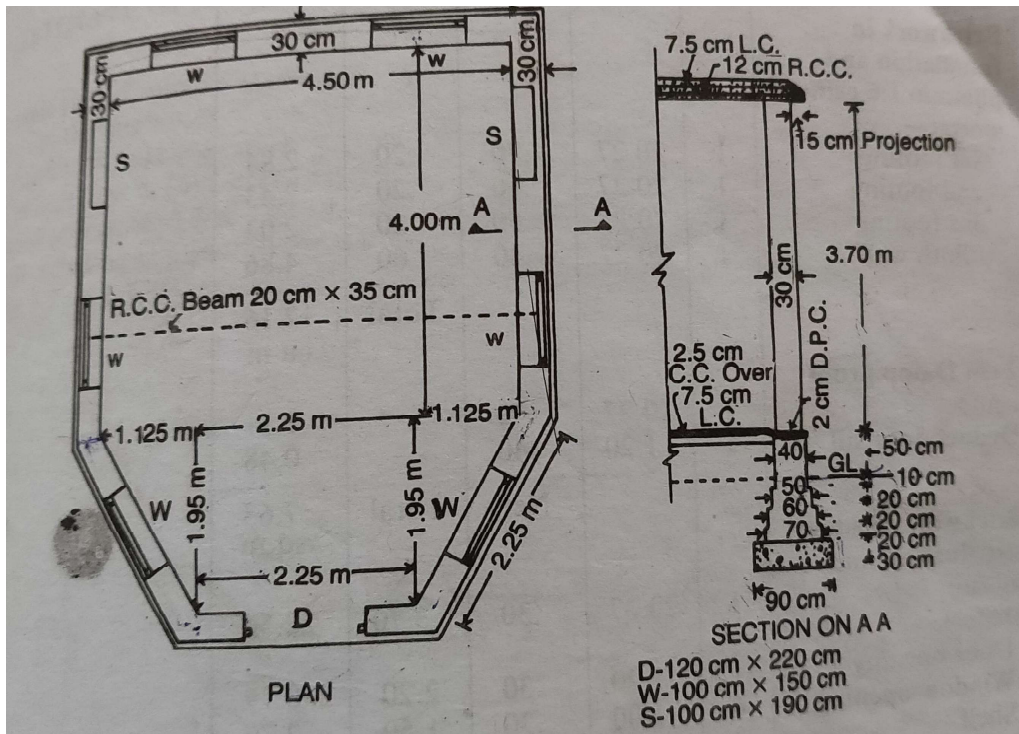
20 marks(KTU DEC 2018)



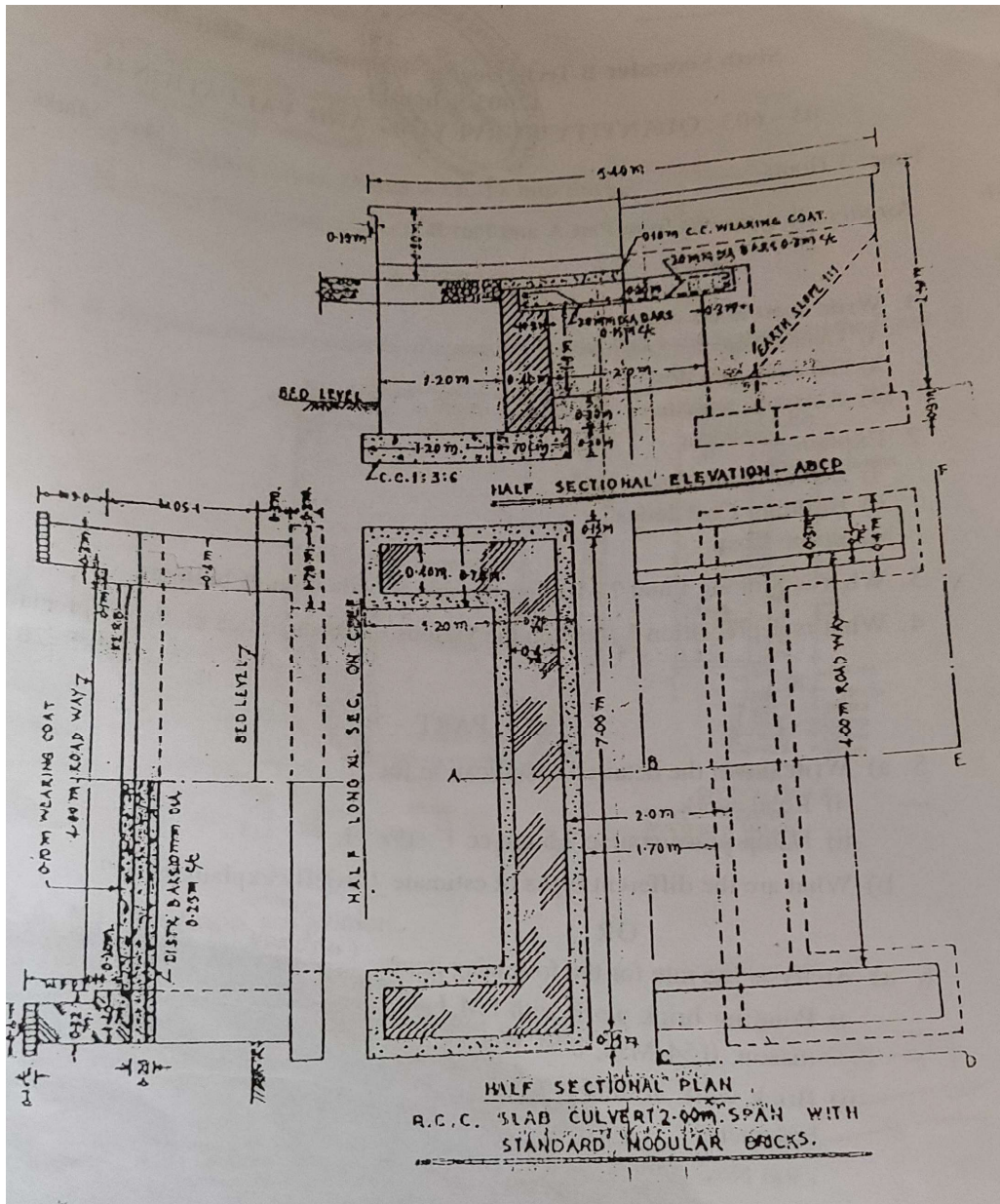
4. Estimate the quantities of the items of the following items of a residential building

- 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

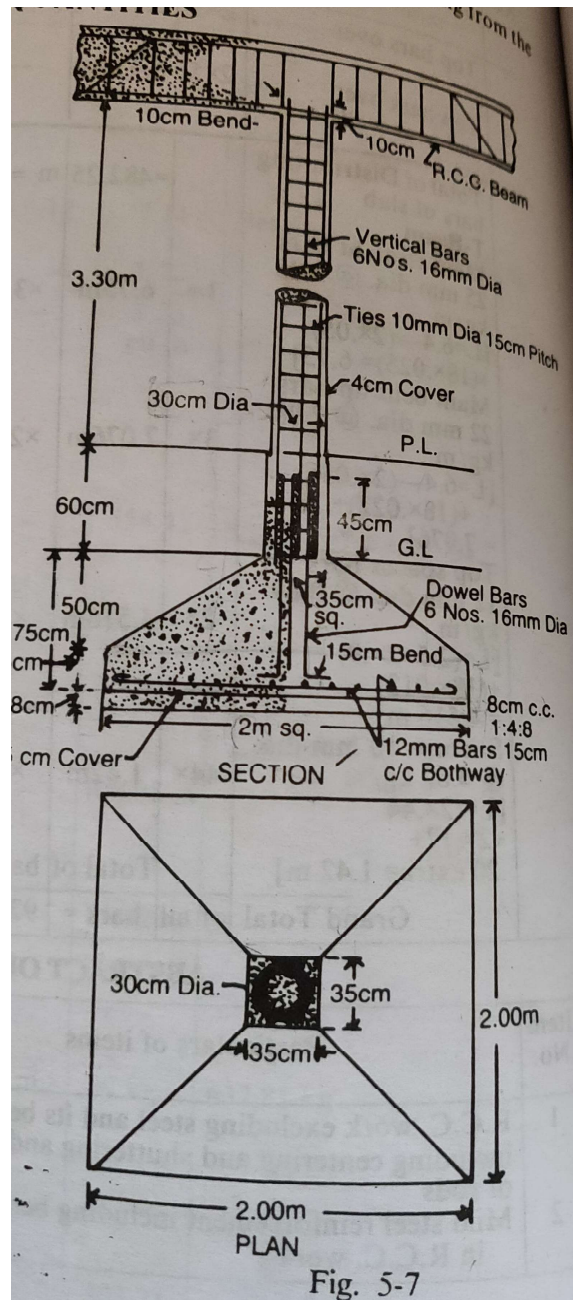
20 marks(KTU JULY 2019)



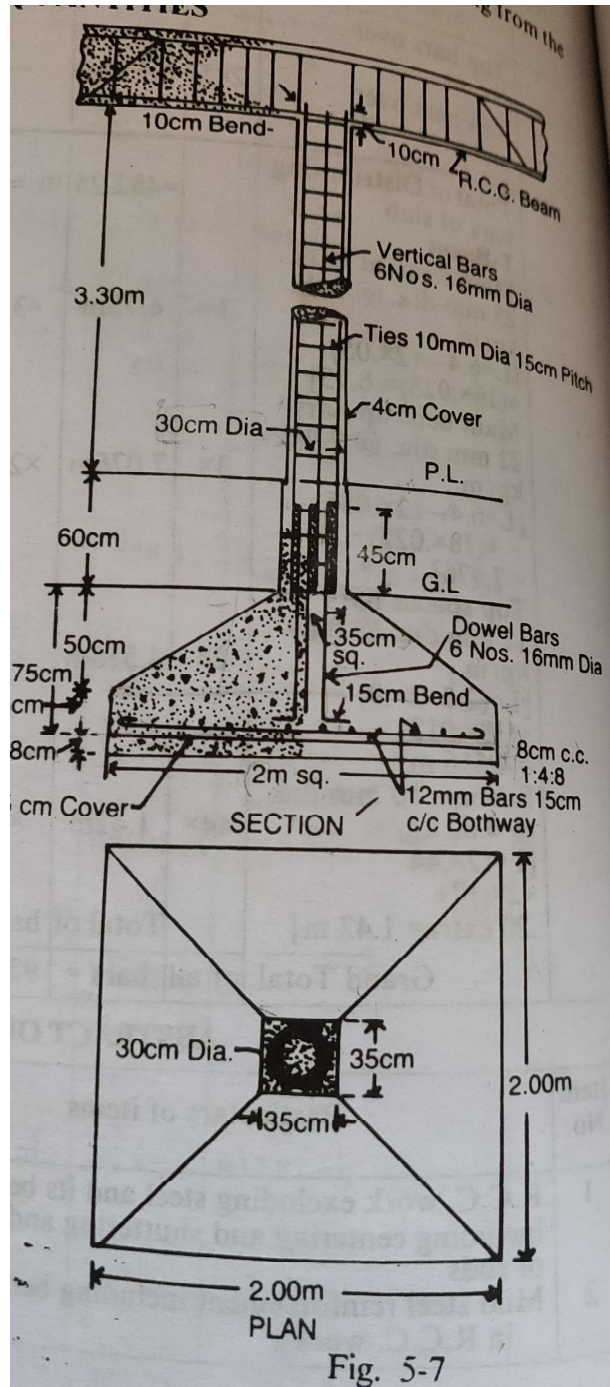
5. Calculate the quantities of following items of work for a single span RCC slab culvert as shown in figure 20 marks(KTU MAY 2019)



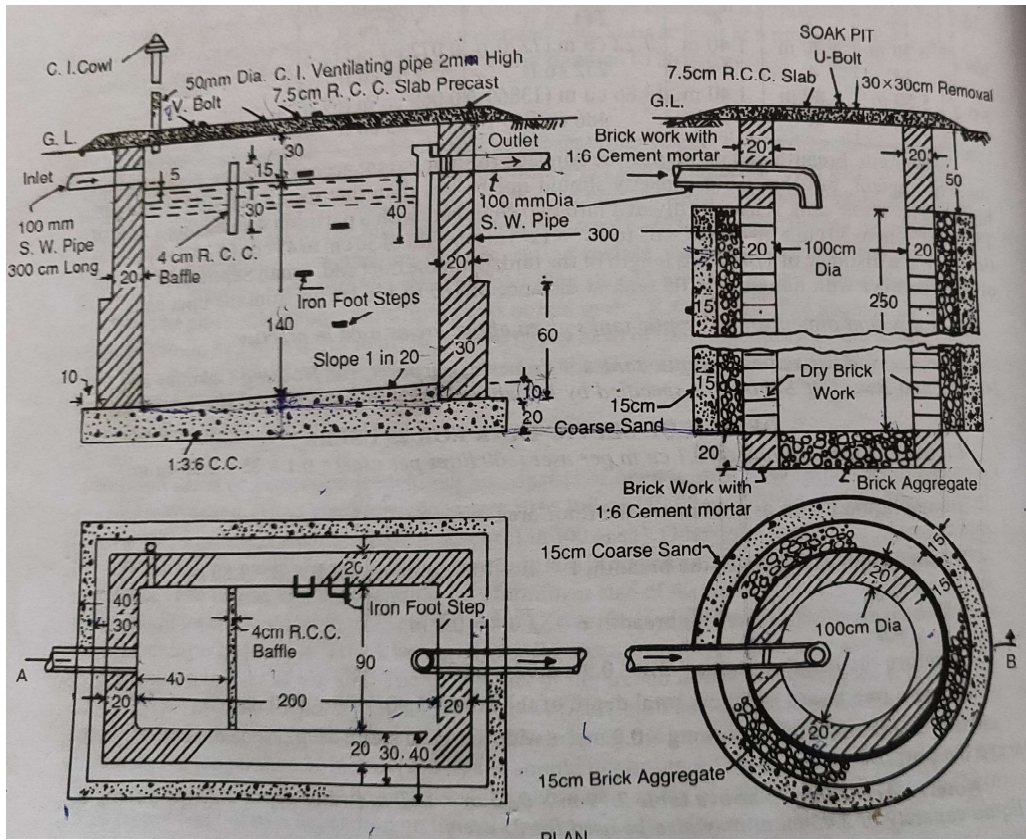
6. Prepare the detailed estimate of RCC column with foundation footing from the given figure.
 Also prepare bar bending schedule 20 marks(KTU DEC 2019)



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



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)

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(A Unit of Vidya International Charitable Trust)

**DEPARTMENT OF CIVIL ENGINEERING
QUESTION BANK
CET458 - SUSTAINABLE CONSTRUCTION**

MODULE I

Sl. No.	Questions	Marks	Question Paper
1	a. Write a short note on embodied carbon.	3	KTU June 2023
	b. Demonstrate Environmental Impact Assessment.	3	
2.	a. Define the term Green Building. Explain the features of green buildings.	5	Model Question
	b. Describe the methods for estimation of carbon foot print.		
3	a. Assume that you are assigned to conduct the Life Cycle Assessment of a building. What steps would you follow to carry out the LCA of the building?	8	KTU June 2023
	b. Discuss embodied energy of a product.	6	
4	a. Explain any one sustainability indicator in detail	8	KTU June 2023
	b. Explain the impacts of global warming and discuss how you can contribute to reducing global warming.	6	
5	Explain sustainability with respect to social, economical, environmental concept.	12	Model Question
6	a. Define Sustainable Development.	5	Model Question
	b. What is carbon credit? Explain in not more than five sentences.	6	
7	Define Global warming and state the reasons. Describe the major impacts and responses to Global Warming	15	Model Question
8	Explain in detail about advantages and short comings of green buildings.	10	Model Question
9	Describe the features of sustainability indicators	5	Model Question
10	What is environmental impact assessment? Why is EIA important for sustainability?	14	Model Question
11	Explain the significance of carbon footprint. Suggest two methods to reduce the carbon footprint in your house	14	Model Question

MODULE II

1	a. Compare adobe and cob construction	3	KTU June 2023
	b. What are insulated concrete forms? Where is it used?	3	
2	a. 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	

3	a. Discuss any three alternative building materials/technologies developed and promoted by TERI b. Deliberate any five sustainable materials that can be made from utilization of wastes.	5 9	KTU June 2023
4	a. Explain any three natural building materials b. What do you mean by hydraform? What are the benefits of using hydraform in construction?	9 5	KTU June 2023
5	a. Explain the properties and uses of sustainable building materials b. Enumerate the properties of wood-based materials that make it sustainable	10 4	Model Question
6	Discuss the role of various Govt and non-Govt organizations in promoting sustainable building materials	14	Model Question
7	Explain the application of waste materials in building construction	10	Model Question
8	What is mud stabilization? Explain the different stabilization techniques for mud	10	Model Question
9	a.Explain the application of locally available materials in building construction b.Define prefabrication.	3	Model Question
10	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
11	a. List out the non toxic materials used in construction. Explain any two in detail. b. 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	a. Differentiate between ferrocement and ferro-concrete b. What is ferrocement construction?	3	Model Question
3	a. Explain the contributions of COSTFORD in promoting sustainable construction. b. What are the advantages of Mivan construction technique?	8 6	KTU June 2023
4	a. Explain the concept of filler slab roofing systems. b. Discuss the role of Habitat in propagating cost-effective constructions.	7 7	Model Question
5	a. Explain the role of ferrocement in sustainable construction with its advantages and disadvantages. b. Explain arches and their benefits	9 5	KTU June 2023
6	Explain the alternative technologies used in green building.	8	Model Question
7	a. What do you mean by Rat-trap bond? Draw a neat sketch of the Rat-trap bond. b. What are the benefits of using pre-engineered construction?	3 3	KTU June 2023
8	a. List out the merits and demerits of prefabricated construction. b. What is Cob construction?	5	Model Question
9	a. Explain the applications of bamboo in building construction b. Describe Brick arch foundation with neat sketches	10	Model Question

10	Discuss the contribution of Nirmithi kendra and Coastrord in sustainable building constructions.	10	Model Question
11	Explain the various innovative roofing techniques with the help of neat sketches	10	Model Question

MODULE IV

1	a. Discuss the role of NBC in sustainable building construction b. Describe net zero building	3	Model Question
2	Discuss the features of energy efficient buildings based on (i) institutional case study (ii) commercial case study (iii) residential case study	9	Model Question
3	Explain the possibilities of non conventional energy sources.	10	Model Question
4	Describe the need for the Energy Conservation.	10	Model Question
5	Discuss the relevance of energy efficient technologies in HVAC systems.	10	Model Question
6	Explain LEED and GRIHA with the help of suitable examples.	10	Model Question
7	a. Illustrate the importance of the National Building Code. b. What are building-integrated photovoltaics?	3 3	KTU June 2023
8	What is purpose of green rating system and explain its objectives?	8	Model Question
9	a. Explain about any fully solar energy based building in India. b. Explain the passive cooling techniques in green buildings	8	Model Question
10	a. State different rating systems for Green building. b. Explain salient provisions used in IGBC green rating system.	8 10	Model Question
11	Explain salient provisions used in IGBC green rating system.	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

CET 434 RAILWAY AND TUNNEL ENGINEERING

MODULE 1

Sl.No.	Questions	Question Paper	Mark
1	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	KTU April 2022 (2019 Scheme)	6
2	Explain the term ballast less tracks and explain its advantages.	KTU April 2021 (2019 Scheme)	6
3	Enumerate the role of Indian railways in National development.	KTU April 2022 (2019 Scheme)	4
4	What are the factors affecting the selection of gauges?	KTU April 2021 (2019 Scheme)	6
5	Describe the functions and requirements of sleepers.	KTU Dec 2022 (2019 Scheme)	4
6	Compare and differentiate the different types of rails with neat sketches.	KTU Dec 2022 (2019 Scheme)	8

MODULE 2

1	What are the different types of signals according to location? Illustrate with the help of neat sketch.	KTU Dec 2018 (2015 scheme)	7
2	How are railway stations classified? Explain each with neat sketches.	KTU Dec 2018 (2015 scheme)	5
3	Explain scissors crossover with neat sketch.	KTU Dec 2018 (2015 scheme)	3
4	What are the different systems of controlling the movement of trains?	KTU Dec 2019 (2019 scheme)	3
5	Explain the working of absolute block system.	KTU Dec 2018 (2015 scheme)	3
6	Explain different types of railway signals according to their operational characteristics. With the help of neat sketch.	KTU Dec 2019 (2019 scheme)	5
7	Draw a neat sketch of a Right-hand turnout and mark its components.	KTU Dec 2018 (2015 scheme)	4
8	Draw a neat sketch of a Left-hand turn out and mark its components	KTU Dec 2018 (2015 scheme)	4
9	List out the different types of functional signals. Discuss in detail the working of any one signal with neat sketch.	KTU Dec 2019 (2019 scheme)	10
10	What is the purpose of providing marshalling yards? What are the main siding features of marshalling yards? Support your answers with appropriate figures.	KTU Dec 2018 (2015 scheme)	10

MODULE 3

1	Discuss on Conventional and Advanced Remedial Aids for preventing railway accidents.	KTU Dec 2018 (2015 scheme)	7
2	Explain how the accidents are classified on Indian Railways.	KTU Dec 2018 (2015 scheme)	5
3	Explain about any four advanced technical remedial aids or measures for prevention of railway accidents.	KTU Dec 2019 (2019 scheme)	5
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.	KTU Dec 2018 (2015 scheme)	4
5	Discuss about the maintenance and renewal of rails, sleepers and track fittings.	KTU Dec 2019 (2019 scheme)	4
6	What is packing? Explain the three different types of packing.	KTU Dec 2019 (2019 scheme)	6

MODULE 4

1	List the various methods of tunnelling in hard and soft rocks. Explain in detail anyone tunnelling method employed in hard strata and soft soil.	KTU Dec 2018 (2015 scheme)	7
2	Write down the procedure for constructing a tunnel in clayey soil. Explain its advantages. (Draw necessary diagrams)	KTU Dec 2018 (2015 scheme)	5
3	What is an air lock? Describe the air lock method of tunnelling in soft soil.	KTU Dec 2018 (2015 scheme)	10
4	Write down the procedure for constructing a tunnel in water bearing soil.	KTU Dec 2019 (2019 scheme)	10
5	Explain the advantages of air lock. (Draw necessary diagrams).	KTU Dec 2018 (2015 scheme)	8
6	How is transferring of centre line into the tunnel carried out? Explain with the help of neat diagram.	KTU Dec 2019 (2019 scheme)	10
7	Explain the four different stages in setting out the centre line of tunnel.	KTU Dec 2018 (2015 scheme)	10

MODULE 5

1	Explain the three systems of mechanical ventilation of a tunnel with neat sketch.	KTU Dec 2018 (2015 scheme)	7
2	List out different methods of tunnelling in hard rocks. Explain any one of the methods.	KTU Dec 2018 (2015 scheme)	5
3	Explain the dust control methods in tunnelling.	KTU Dec 2018 (2015 scheme)	10
4	Explain the drainage process in tunnels.	KTU Dec 2019 (2019 scheme)	18

CET 438 - AIRPORT SEAPORT AND HARBOUR ENGINEERING

QUESTION BANK

MODULE I

Sl. No.	Questions	Mark	Question Paper
1	a. Enlist component parts of an airport.	3	KTU June 2023 (2019 scheme)
	b. How is airport planning affected by aircraft turning radius?	3	
2.	a. Discuss the factors to be considered for airport site selection.	7	KTU June 2023 (2019 scheme)
	b. Discuss the ideal requirements of airport layout.	7	
3	a. What are the classification as per ICAO?	7	KTU June 2023 (2019 scheme)
	b. Explain the various aspects to be taken care of while planning an airport as per ICAO.	7	
4	a. List the various parts of an aircraft and explain each.	6	KTU June 2023 (2019 scheme)
	b. What are the aircraft characteristics?	8	
5	Differentiate between hanger and apron.	3	KTU June 2023 (2019 scheme)
6	a. What are the planning process as per FAA and ICAO?	5	Model Question
	b. Classify the airport as per ICAO.	6	
7	Explain the components of airport and discuss the factors to be considered for an ideal airport.	14	Model Question
8	Explain in detail about the airfield and terminal area.	10	Model Question
9	Describe the features of an ideal airport.	6	Model Question
10	What are the differences between runway and taxiway?	3	Model Question

MODULE II

Sl. No.	Questions	Mark	Question Paper
1	Calculate the actual length of runway from the following data. Airport elevation R.L. 100. Airport elevation temperature 28-degree celcius. Basic runway length 600m. Highest point along the length R.L. 98.2. Lowest point along the length R.L. 95.2. Standard atmospheric temperature at MSL 15 degree celcius.	6	KTU June 2023 (2019 scheme)
2	a. List the different types of runway patterns with the help of diagrams.	5	KTU June 2023 (2019 scheme)
	b. Explain any one method of fixing orientation of runway using windrose diagram.	9	
3	a. What are the factors affecting basic runway length?	5	KTU June 2023 (2019 scheme)
	b. Explain runway orientation and wind coverage.	9	
4	a. Discuss the design of taxiway.	9	Model Question
	b. Explain the features of terminal area planning.	5	
5	a. Lis the factors to be considered in the design of runway.	6	Model Question
	b. Define approach zone.	4	
6	Explain cross wind component and calm period.	3	KTU June 2023 (2019 scheme)

7	Distinguish between approach zone and clear way.	3	KTU June 2023 (2019 scheme)
8	Explain basic runway length and mention the assumptions.	10	Model Question
9	Explain the terms a. airport capacity b. airport size	3	Model Question
10	Explain zoning laws.	10	Model Question

MODULE III

Sl. No.	Questions	Mark	Question Paper
1	What are the objectives of traffic control?	3	KTU June 2023 (2019 scheme)
2	a. Explain the features of lighting of runway approaches.	3	KTU June 2023 (2019 scheme)
3	a. Discuss the various features of Instrument Landing System. b. Write short note on navigational and systems in air traffic control.	7 7	KTU June 2023 (2019 scheme)
4	a. Explain in detail about runway markings. b. How are 1. Runway threshold marking and 2. Runway central line markings executed on a typical airport?	7 7	Model Question
5	a. Explain the role of control system and control network? b. Explain in detail the visual aids used.	9 5	KTU June 2023 (2019 scheme)
6	Explain runway-landing designator marking.	8	Model Question
7	a. What do you mean by runway touchdown zone marking? b. What are the advantages of lighting the runway?	3 3	Model Question
8	a. Define airport markings. b. Classify the airport markings and define each.	6 8	Model Question
9	Differentiate between threshold marking and shoulder marking.	6	Model Question
10	What is wind direction indicator?	10	Model Question

MODULE IV

Sl. No.	Questions	Mark	Question Paper
1	a. What are the factors affecting the selection of site for harbour? b. Explain the requisites of good harbour.	7 7	KTU June 2023 (2019 scheme)
2	Draw the layout of harbour and mark salient features.	3	KTU June 2023 (2019 scheme)
3	Distinguish between piers and wharfs.	3	KTU June 2023 (2019 scheme)
4	What are the functions of navigational aids of a harbour?	3	Model Question
5	Define bouys and beacons.	3	Model Question
6	Explain the necessity and function of navigational aids.	10	Model Question
7	a. Briefly discuss the design and construction aspects of breakwater. b. Explain the features of quays and jetties.	3 3	KTU June 2023 (2019 scheme)
8	Differentiate between transit sheds and warehouses.	7	Model Question
9	a. Write down the classification of breakwater. b. Explain the components of harbour.	7 7	Model Question
10	What are the principles of harbour planning?	12	Model Question

MODULE V

1	Explain dock and list the types.	3	Model Question
2	a.Explain types, functions and design considerations of wet docks. b.Explain floating dock and graving dock.	7 7	KTU June 2023 (2019 scheme)
3	a.Explain the features and design considerations of dry dock. b.Explain working of wet docks in tidal basind with help of diagram.	7 7	KTU June 2023 (2019 scheme)
4	Explain the purpose of docks.	3	Model Question
5	Illustrate the application of floating docks.	3	Model Question
b	Explain the operation of lock gates and passage.	6	Model Question
5	Explain the design considerations of dry docks.	3	Model Question
6	What is the difference between dock and port?	3	Model Question
7	Explain the functions of a dock.	3	Model Question
8	What do you mean by repair of docks?	3	Model Question
9	Explain wet dock.	3	Model Question
10	What do you mean by a lock gate?	3	Model Question
