Code: 19A17BT

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022

Repair & Rehabilitation of Structure

(Civil Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL

UNIT–I

| 1. | a) | Outline the need for repair and rehabilitation of structures. | 7M | 1 | 4 |
| | b) | Explain briefly the serviceability and durability of structures. | 7M | 1 | 4 |

OR

| 2. | | Illustrate briefly the structural appraisal and economic appraisal in repair and rehabilitation. | 14M | 1 | 4 |

UNIT–II

| 3. | | Explain the degradation of concrete structures caused by the effects due to climate and thermal action. | 14M | 2 | 2 |

OR

| 4. | a) | Discuss various factors responsible for initiation of the process of deterioration. | 4M | 2 | 2 |
| | b) | Explain the process of deterioration of concrete by chemical factors and design and construction errors. | 10M | 2 | 2 |

UNIT–III

| 5. | | Illustrate any four special concretes used for repair of structures. | 14M | 3 | 4 |

OR

| 6. | | Analyze the use of steel corrosion inhibitor paint for steel in reinforced concrete construction, bonding coats and rust remover paint. | 14M | 3 | 4 |

UNIT–IV

| 7. | | Outline the procedure for repair and rehabilitate a structure distressed due to fire? | 14M | 3 | 4 |

OR

| 8. | | Illustrate in detail the various methods for strengthening the existing column. | 14M | 3 | 4 |

UNIT–V

| 9. | | Summarize the repair and conditional assessment of concrete structures in detail. | 14M | 4 | 5 |

OR

| 10. | | Summarize the underlying working principle of non-destructive methods like rebound hammer, ultrasonic pulse velocity. | 14M | 4 | 5 |

END

Code: 19A17AT

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022

Sustainable Construction Methods

(Civil Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	BL

UNIT–I

| 1. | Explain in detail various stages of environmental assessment and intervention | 14M | CO1 | L1 |

OR

| 2. | Write short notes on (i) Cradle to cradle approach and (ii) Bio mimicry | 14M | CO1 | L1 |

UNIT–II

| 3. | Explain in detail and differentiate between rammed earth and adobe type of construction | 14M | CO2 | L2 |

OR

| 4. | Explain in detail about the mineral waste and agriculture waste and their applications in green buildings. | 14M | CO2 | L2 |

UNIT–III

| 5. | Explain the innovative use of tires, glass and bottles and shipping containers in the construction industry. | 14M | CO3 | L2 |

OR

| 6. | Explain in detail about the building demolition waste and various sustainable usages. | 14M | CO3 | L1 |

UNIT–IV

| 7. | Explain in detail about the funicular shells and filler slabs. | 14M | CO4 | L2 |

OR

| 8. | Explain the alternative construction methods using stabilized mud blocks and steam cured blocks | 14M | CO4 | L2 |

UNIT–V

| 9. | Differentiate between locally available and locally manufactured materials | 14M | CO5 | L1 |

OR

| 10. | Explain the significance of low VOC paints, coatings and adhesives in the construction industry. | 14M | CO5 | L1 |

END

Code: 19A171T

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022

Transportation Engineering

(Civil Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	BL

UNIT–I

1. a) Explain the role of transportation in rural development in India? — 7M, CO 1, BL 2

   b) Explain briefly the modified classification of road system in India as per the third twenty year road development in India? — 7M, CO 1, BL 2

OR

2. a) Briefly outline the main features of various road patterns commonly in use. Explain with sketches the star and grid pattern? — 7M, CO 1, BL 4

   b) What are the uses of fact finding surveys? How are these used and interpreted? — 7M, CO 1, BL 1

UNIT–II

3. a) Discuss the effects of shape of camber and the effects of providing steep cross fall? — 7M, CO 2, BL 2

   b) Derive an expression for calculating the overtaking sight distance on highways? — 7M, CO 2, BL 6

OR

4. a) Calculate the safe overtaking sight distance for a design speed of 96 kmph. Assume all the other data suitably? — 7M, CO 2, BL 3

   b) Calculate the extra widening required for a pavement of within 7m on a horizontal curve of radius 350m if the largest wheel base of vehicle expected on the road is 7m. Design speed is 85kmph. Compare the value required with IRC recommendations? — 7M, CO 2, BL 3

UNIT–III

5. a) What are the various objects and applications of spot speed studies? — 7M, CO 3, BL 1

   b) Explain various measures that may be taken to prevent accidents? — 7M, CO 3, BL 2

OR

6. a) Enumerate the various types of intersections and the basic principles involved? 7M 3 5

   b) What is traffic rotary? What are the advantages and limitations? 7M 3 1

UNIT–IV

7. a) Indicate the main features of IS classification system. Discuss their advantages and limitations? 7M 4 1

   b) Explain briefly about Impact test on stone aggregates? 7M 4 2

OR

8. a) Explain briefly about Ductility test on Bitumen? Explain its limitations? 7M 4 2

   b) Explain briefly about Marshall method of bituminous mix design? 7M 4 2

UNIT–V

9. a) Discuss the advantages and limitations of CBR method of design? 7M 5 2

   b) Explain ESWL and the concept in determination of the equivalent wheel load? 7M 5 2

OR

10. a) Calculate the stresses at interior, edge and corner regions of a concrete pavement using Westergaard's equation for the following data. Wheel load = 3600 kg, modulus of elasticity of concrete is $3.5*10^5$ kg/cm^2, pavement thickness is 25 cm, modulus of subgrade reaction is 9 kg/cm^3, diameter of loaded area is 20 cm, Poisson's ratio of concrete is 0.15. Assume data if any required. 7M 5 3

   b) Discuss the design details of dowel bars? 7M 5 2

END

Code: 19A17ET

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022

Advanced Environmental Engineering

(Civil Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL

UNIT–I

			Marks	CO	BL
1.	a)	Discuss about the depletion of natural resources.	7M	CO1	L1
	b)	What do you mean by ecological resilience and explain about the loss of resilience in land and water ecosystem.	7M	CO1	L2

OR

2.	a)	Discuss about the Indian Laws in connection to various environmental issues.	7M	CO1	L1
	b)	What is land pollution? Discuss methods to rectify it.	7M	CO1	L2

UNIT–II

3.	a)	Discuss about Streeter-Phelps water quality monitoring tool.	7M	CO2	L1
	b)	Write a note on occupational health, importance and benefits of occupational nutrition at work place.	7M	CO2	L2

OR

4.	a)	What are water born dieses? Discuss about various plans to prevent and control it.	7M	CO2	L1
	b)	Discuss in detail about community health & its significance.	7M	CO2	L2

UNIT–III

5.	a)	Discuss about the characteristics of liquid waste from dairy industry & methods of its disposal	7M	CO3	L1
	b)	Write a note on treatment of liquid waste from sugar industry.	7M	CO3	L2

OR

6.	a)	Write a note on treatment of liquid waste from dairy industry.	7M	CO3	L1
	b)	Describe treatment methods of liquid waste from paper and pulp industry.	7M	CO3	L2

UNIT–IV

7.	a)	Explain Global warming. What are the causes and effects of Global warming?	7M	CO4	L1
	b)	Discuss in detail about Eco-friendly construction & its advantages.	7M	CO4	L2

OR

8.	a)	Mention the causes, effects and solutions to agricultural pollution.	7M	CO4	L1
	b)	Discuss about causes, sources and effects of radio-active pollution.	7M	CO4	L2

UNIT–V

9.	a)	Discuss about various types of plume behavior.	7M	CO5	L1
	b)	What are gaseous pollutants? Describe methods to control SO_x,	7M	CO5	L2

OR

10.	a)	Write a note on atmospheric stability in connection to various lapse rates.	7M	CO5	L1
	b)	Describe Gaussian dispersion model for plume behavior.	7M	CO5	L3

END

Code: 19A16CT-SS

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022

Bridge Engineering

(Civil Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	BL

UNIT–I

		Marks	CO	BL
1. a.	What essential data is required for the design of a Bridge?	8M	CO1	2
b.	What are the R.C.C bridges? Explain any two of them with neat sketches.	6M	CO1	2

OR

2.	Describe the Box culverts with neat sketch and design process involved in it.	14M	CO1	2

UNIT–II

3. Design a R.C slab culvert for a national highway to suit the following data

Carriage way: two lane 7.5m wide   Footpath : 0.9m on either side

Clear span: 5m   Wearing coat: 75mm

Materials: M25grade concrete Fe415   Loading: IRC class AA tracked vehicle

Design the RC slab deck and sketch the details of the reinforcement in the cross section of slab.   14M   CO2   6

OR

4. a.	What are T- beam bridges? Draw a typical cross section of t-beam RCC bridge with four beam arrangement showing the Kerbs, the railing and appropriate reinforcement for slab.	8M	CO2	2
b.	Write the procedure for the design of a bridge by a method given by M.Pigeaud.	6M	CO2	6

UNIT–III

5.	What is the design procedure for plate girder bridges? Explain step by step.	14M	CO3	6

OR

6. Using the following particulars to design a plate girder bridge for a broad guage track.

Span : 20m   Top level of the railway embankment: 1.15m

Bed level of the stream : 120m   Ground level suitable for foundation: 98m

Stream bund top level: 101.5m   14M   CO3   6

UNIT–IV

7. A reaction of 2500kN is expected at the supports of a 20m spanned T-beam bridge. Design a rocker and roller bearing. The other details are:

Allowable pressure on rollers = 5 N/mm daiameter / mm length

Bearing pressure on rocker pin = $30N/mm^2$

Allowable pressure on bearing plate = $2000N/mm^2$

Allowable pressure on concrete bed block = 3.8 N/mm^2 14M   CO4   6

OR

8. Design an elastomeric unreinforced neoprene pad bearing to suit the following data:

   Vertical load(sustained): 200kN

   Vertical load (dynamic): 40kN

   Horizontal force: 60kN

   Modulus of rigidity of elastomer:$1N/mm^2$

   Friction coefficient : 0.3   14M   CO4   6

   UNIT–V

9. Verify the stability of the abutment shown in fig. the other salient details are given below:

   Material of the abutment = concrete

   Live load on the bridge = IRC class AA tracked

   Density of soil = $18kN/m^3$

   Angle of repose = 30^0

   Coefficient of friction = 0.6
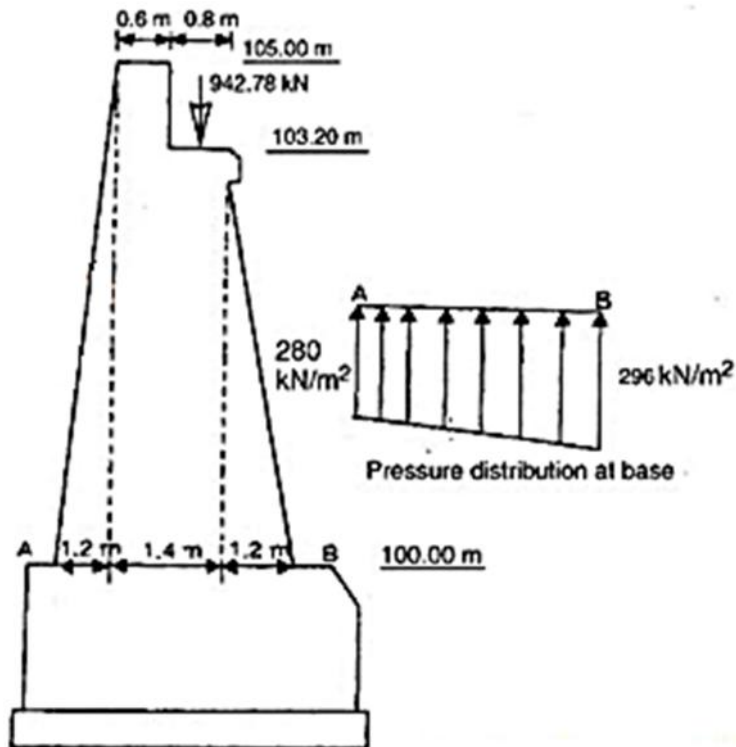
                                                             14M   CO4   6

OR

10. Write a short note for the following:

   i) Wing wall

   ii) Pier

   iii) Bridge foundation

   iv) abutment   14M   CO4   2

END

Code: 19A17CT

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022

Construction Project Planning & Systems

(Civil Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	BL

<div align="center">

UNIT–I

</div>

1. a) Discuss the main objectives and applications of Project management?   **7M**   1   1

   b) What is a milestone chart? How does it differ from a bar chart? How can milestone chart developed into a network   **7M**   1   2

<div align="center">

OR

</div>

2. a) List out the conditions of contract agreement.   **4M**   1   1

   b) Draw a network diagram for the given activity and durations in the following table. Find out the critical path, EST, EFT, LST, LFT, TF, FF

Description of activity	Activity symbol	Preceding activity	Succeeding activity	Duration days
Dig foundation	A	None	B	3
Place from work	B	A	C	6
Place concrete	C	B	G	6
Obtain steel	D	G, H	None	7
Cut and bent steel	E	None	F	4
Place steel reinforcement	F	E	G	3
Obtain materials for concrete	G	F, C	D	2

10M   1   3

<div align="center">

UNIT–II

</div>

3. a) Explain the concept of prefabrication in construction. How it is essential to a large-scale project?   **7M**   2   2

   b) What are the principles to be observed in construction of steel structures (Industrial Structures)?   **7M**   2   1

<div align="center">

OR

</div>

4. a) Distinguish between propped and unpropped construction methods   **7M**   2   2

b) What are the forces considered in the calculation of deflection of precast concrete beams 7M 2 1

UNIT–III

5. a) Explain the difference between hoists and cranes with their applications. 7M 3 2

   b) Mention the various types Scaffoldings and their uses keeping in view of economic considerations. 7M 3 2

OR

6. a) How do you govern the selection of crawler type tractor on a job compare them? Applications. 7M 3 1

   b) Discuss the importance of fabrication and erection work in engineering projects. 7M 3 1

UNIT–IV

7. a) Explain the constraints of construction industry? 7M 4 2

   b) Discuss the concepts S-Curves, Earned Value. 7M 4 1

OR

8. a) Write the common practices in construction. 7M 4 1

   b) What do you understand by Sources of funds? Why is it essential? 7M 4 1

UNIT–V

9. a) Discuss various criteria regarding quality management system and requirements. 7M 5 1

   b) Bring out the difference between an accident, an incident and a near miss. Give examples of the same. How are these issues correlated? 7M 5 4

OR

10. a) What are the safety measures for demolition of structures? 7M 5 1

    b) What are the main steps in the demolition risk management process? 7M 5 1

END

Code: 19A172T

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022
Estimation, Costing and Valuation
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
****

| | | Marks | CO | BL |

UNIT–I

1. a) What are standard specifications? What are the precautions to be taken while using standard specifications? — 7M 1 1

   b) Write a brief note on Standard Specifications for Road and Bridge works. — 7M 1 1

OR

2. a) Explain different methods for estimating building works — **7M** **2** **2**

   b) List out the main items of work in construction and explain them in detail. — **7M** **2** **2**

UNIT–II

3. Calculate the quantities of the following items for the building shown in figure below: i. Earth work in excavation   ii. Foundation Concrete iii. Super structure with brick masonry
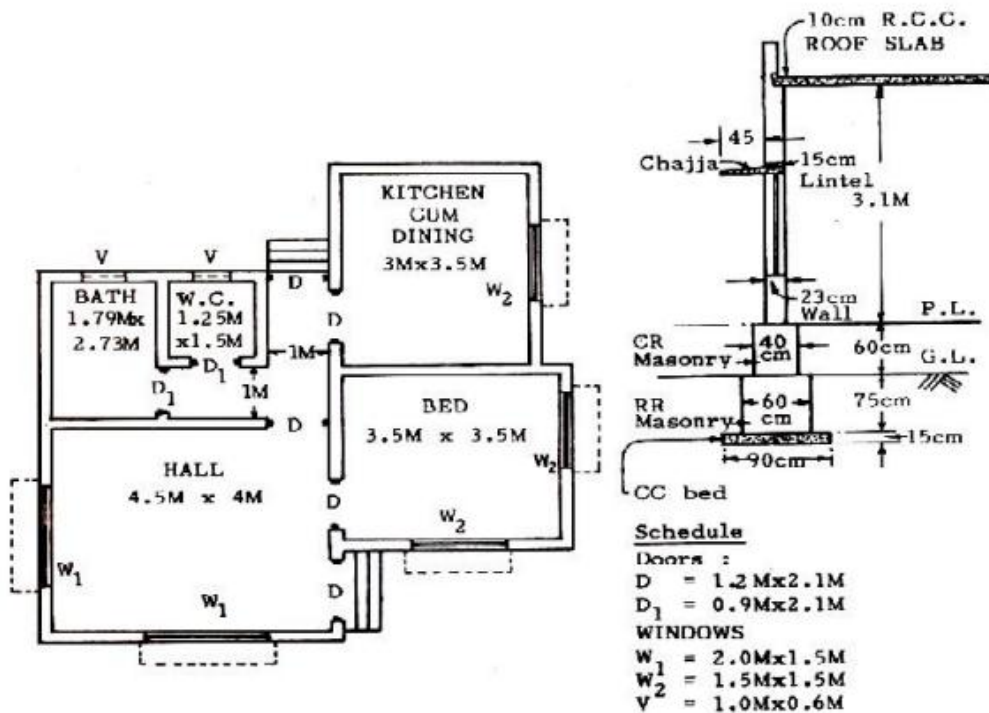
14 **3** **5**

OR

4. Calculate the quantities of the following items for the building shown in above figure: i. CC bedding   ii. Super structure plastering inside. iii. flooring inside. — 14M 2 2

UNIT–III

5. Prepare a detailed estimate for earth work for a portion of a road from the following data. The formation level at starting point is 120m. Formation width of road is 7.5m and side slopes of banking and cutting are 2:1. The road is in downward gradient of 1 in 160 up to 80m and then the gradient changes to 1 in 120 downward.

Distance in m	0	20	40	60	80	100	120	140	160
R.L of Ground	113	115.7	116	117	118	119	117.6	116.3	115.5

14M 3 5

OR

6. a) State any three methods of calculation of earth work for canals. Explain all of them with neat sketch. 14M 2 1

UNIT–IV

7. a) Define the term contract. What are the essential requirements of a valid contract 7M 4 1

   b) Explain tenders? Describe the tender document procedure in detail. 7M 4 4

OR

8. a) Write short notes on
   i) Standard Measurement book   ii)Record Drawing 7M 4 3

   b) Prepare the rate analysis for Random Rubble Stone Masonry in superstructure in 1:6 cement sand mortar. 7M 4 4

UNIT–V

9. a) A building costing Rs.7,00,000.00/- has been constructed on a freehold land measuring 100sqm recently in a big city. Prevailing rate of land in the neighborhood is Rs. 150.00 per sq.m.Determine the net rent of the property, if the expenditure on an outgoing including sinking fund is Rs 24,000.00 per annum.Work out also the gross rent of the property per month 10M 5 4

   b) Write short note on
   i)Depreciation method of valuation ii)Rental method of valuation 4M 5 2

OR

10. Prepare a bar bending schedule and calculate the quantity of reinforcement in a R.C.C. (1:2:4) lintel as per data given below:
    Total length of the lintel including bearing = 1.5m; Thickness of wall= 300mm; Thickness of lintel = 150mm; Main reinforcement 5 bars of 12mm dia. (out of which 2 bars are bent up near support). Top reinforcement 2 bars of 10mm dia.; 6mm dia. 2 legged stirrups are provided @175mm c/c uniformly. 14M 5 4

END

Code: 19A17FT

IV B.Tech. I Semester Regular Examinations Nov/Dec 2022
Environmental Impact Assessment & Life Cycle Assessment
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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			Marks	CO	BTL
		UNIT–I			
1.	a)	Define EIA and discuss the need and objectives of EIA.	7M	1	1
	b)	Illustrate step-by-step procedure to develop EIA and EIS.	7M	1	2
		OR			
2.	a)	Enumerate the role of NEPA and CEQ in EIA.	7M	1	1
	b)	With the help of flow diagram Illustrate EIA, EIS and FONSI.	7M	1	2
		UNIT–II			
3.	a)	Explain briefly various categories of Checklist method with their merits, demerits and applications.	7M	2	2
	b)	Comment on measures for developing a list of environmental attributes in effectiveness of pollution control.	7M	2	3
		OR			
4.	a)	Briefly explain fault tree analysis in EIA	7M	2	2
	b)	Enumerate the importance of socioeconomic aspects in EIA	7M	2	2
		UNIT–III			
5.	a)	List and explain roles and responsibilities of stakeholders in public participation	7M	3	2
	b)	Explain the impact of resettlement and rehabilitation on socio cultural aspects.	7M	3	2
		OR			
6.	a)	Enumerate different objectives of public participation	7M	3	2
	b)	Illustrate with an example, the scope of environmental management system in any project with minimum impact on environment.	7M	3	3
		UNIT–IV			
7.		Illustrate with a case study of energy balance and management in industry to reduce the environmental impact.	14M	4	3
		OR			
8.	a)	Explain the operational control in highway project to reduce the impact during running phase.	7M	4	2
	b)	Enumerate the importance of post project monitoring in EIA.	7M	7	2
		UNIT–V			
9.	a)	List and explain the limitations of life cycle assessment.	7M	5	1
	b)	Discuss the role of life cycle assessment in assessing ecological risk and human risk.	7M	5	2
		OR			
10.	a)	Enumerate life cycle assessment of plastic with an example.	7M	5	3
	b)	Explain the importance of life cycle assessment in finding ecosystem impacts and uncertainty analysis	7M	5	3

END