



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

First Semester, M.Tech. - Civil Engineering (MCAD)

Semester End Examination; April / July -2021

Rehabilitation of Structure

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Reproduce the basic knowledge of mathematics, science and engineering in the maintenance and rehabilitation of structures.

CO2: Demonstrate the procedural knowledge to maintain and rehabilitate structures.

CO3: Practice the culture of professional and ethical responsibility by following codal provisions in the rehabilitation of structures.

CO4: Provide factual knowledge on analysis and design of rehabilitation of structures and train students to participate and succeed in competitive examinations.

Note: I) Answer any FIVE full questions, selecting ONE full question from each unit.

II) Any THREE units will have internal choice and remaining TWO unit questions are compulsory.

III) Each unit carries 20 marks. IV) Missing data, if any, may suitably be assumed.

Q. No.	UNIT - I	Marks	BLs	COs	POs
1a.	Define the following terms: i) Repair ii) Rehabilitation iii) Corrosion iv) Honeycombing on concrete v) Popouts on concrete	10	L1	CO1	PO1,2,4,5
b.	What are the physical causes for deterioration of concrete structures? Explain any two in brief.	10	L1	CO1,2	PO1,2,4,5
OR					
1d.	Explain in brief about sulphate attack on concrete.	10	L1	CO2	PO1,2,4,5
e.	List the corrosion protection techniques. Briefly explain any two methods.	10	L1	CO1,2	PO1,2,4,5
UNIT - II					
2 a.	Differentiate NDT and Destructive test.	4	L2	CO1	PO1,2,3,4,5
b.	Explain in brief Pullout and Pull off test.	10	2	CO1	PO1,2,3,4,5
c.	Explain the In-Situ permeability test on concrete.	6	L2	CO1	PO1,2,3,4,5
OR					
2 d.	What is direct load testing? Explain how it is conducted on beam element?	10	L2	CO2	PO1,2,3,4,5
e.	What is ultrasonic pulse velocity test? Explain in detail.	10	L2	CO2	PO1,2,3,4,5

UNIT - III

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|------|---|----|----|-----|-------------|
| 3 a. | What are the criteria for the selection of repair materials and list the factors to be considered in selecting a repair material. | 10 | L3 | CO2 | PO1,2,3,4,5 |
| b. | What are the different types of polymer concrete composites? Briefly explain any two types. | 10 | L3 | CO2 | PO1,2,3,4,5 |

OR

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|------|-------------------------------|----|----|-----|-------------|
| 3 d. | Write a note on accelerators. | 10 | L3 | CO2 | PO1,2,3,4,5 |
| e. | Explain in detail about; | | | | |
| | i) SIFCON | 10 | L3 | CO2 | PO1,2,3,4,5 |
| | ii) Fly ash | | | | |

UNIT - IV

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|------|---|----|----|-----|-------------|
| 4 a. | Write a note on classification of cracks. What are the factors that affect cracks? What are the measures to be adopted to rectify the cracking? | 10 | L4 | CO2 | PO1,2,3,4,5 |
| b. | Explain in brief on Jacketing technique. | 10 | L4 | CO2 | PO1,2,3,4,5 |

UNIT - V

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|------|--|----|----|-----|-------------|
| 5 a. | Explain in brief on maintenance of structures. | 10 | L4 | CO2 | PO1,2,3,4,5 |
| b. | What are the points to be considered to inspect a building? How to inspect the condition of flooring and roof leakage. | 10 | L4 | CO1 | PO1,2,3,4,5 |

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