



# 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; June -2022**

**Rehabilitation of Structures**

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.	Questions	Marks	BLs	COs	POs
<b>UNIT - I</b>		<b>20</b>			
1 a.	Which are the various physical and chemical causes of deterioration of concrete structures? Explain any two physical and two chemical causes of deterioration.	10	L1	CO1	PO1,2
b.	Define corrosion. Write a note on corrosion protection techniques.	10	L1	CO1	PO1,2
OR					
1 c.	Briefly explain the mechanics of corrosion.	10	L1	CO1	PO1,2
d.	Write a note on chloride induced corrosion and carbonation induced corrosion.	10	L1	CO1	PO1,2
<b>UNIT - II</b>		<b>20</b>			
2 a.	Briefly explain the working principle of nondestructive testing methods like Rebound and Ultrasonic pulse velocity test for strength estimation of concrete.	10	L1	CO2	PO1
b.	Write a note on semi destructive tests like Pull off test and Break off test for strength estimation of concrete.	10	L1	CO2	PO1
<b>UNIT - III</b>		<b>20</b>			
3 a.	List the factors to be considered while, selecting repair material.	10	L1	CO3	PO1,8
b.	Establish the significance of polumer modified repair material.	10	L1	CO3	PO1,8
<b>UNIT - IV</b>		<b>20</b>			
4 a.	With a neat sketch, explain the RCC jacketing of beams to enhance their flexural strength.	10	L1	CO4	PO1,4,9

- b. With a neat sketch, explain reinforcing with fibre wraps and fibre glass jackets for strengthening of columns. 10 L1 CO4 PO1,4,9
- OR
- 4 c. Briefly explain the techniques like Resin injection and stitching to repair cracked concrete surfaces. 10 L1 CO4 PO1,4,9
- d. Briefly explain the techniques like gravity filling and drilling and plugging to repair concrete surfaces. 10 L1 CO4 PO1,4,9
- UNIT - V** **20**
- 5 a. With a help of life cycle model of concrete structure, write a note on maintenance requirement. 10 L1 CO4 PO1,4,9
- b. Which are the management tools for effective maintenance? 10 L1 CO4 PO1,4,9
- OR
- 5 c. Briefly explain the Mechanical and Implosion methods of demolition. 10 L1 CO4 PO1,4,9
- d. List the preventive measure to be taken during pre-demolition and post demolition. 10 L1 CO4 PO1,4,9

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