

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code

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Seventh Semester B.E. Degree Examinations, February 2025

REPAIR, RETROFITTING AND REHABILITATION OF STRUCTURES

Duration: 3 hrs

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.**2. Missing data, if any, may be suitably assumed*

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO: PI)</u>
<u>Module-1</u>			
1.	a. Explain the following terms: (i) Repair (ii) Rehabilitation (iii) Retrofitting (iv) Strengthening.	08	(2 :1: 1.2.1)
	b. Briefly explain the physical causes for deterioration of concrete structures.	12	(2 :1: 1.2.1)
(OR)			
2.	a. Briefly explain chemical causes for deterioration of concrete structures.	10	(2 :1: 1.2.1)
	b. Explain in detail about evaluation of structural damages for concrete structural elements due to earth quake.	10	(2 :1: 1.2.1)
<u>Module-2</u>			
3.	a. Explain the purpose of assessment in detail.	10	(2 :2: 1.2.1)
	b. Explain in detail about rapid structural safety assessment.	10	(2 :2: 1.2.1)
(OR)			
4.	a. Explain in detail about evaluation of cracks in concrete structures.	10	(2 :2: 1.2.1)
	b. Write short note on Non-Destructive testing system (i) Rebound Hammer (ii) Ultrasonic Pulse Velocity	10	(2 :2: 1.2.1)
<u>Module-3</u>			
5.	a. Briefly explain influence of serviceability and durability of concrete structures.	08	(2 :3: 1.2.1)
	b. Briefly explain, the effect of climate, temperature and chemicals on concrete structures.	12	(2 :3: 1.2.1)
(OR)			
6.	a. Briefly explain corrosion mechanism and the factors affecting corrosion in concrete structures. Also, mention the prevention and control measures for corrosion in detail.	10	(2 :3: 1.2.1)
	b. Explain corrosion inhibitors and mention the advantages of using corrosion inhibitors in concrete structures.	10	(2 :3: 1.2.1)

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)

Module-4

7. a. Define maintenance. List the facts of maintenance and explain the importance of maintenance. **10** (2 :4: 1.2.1)
- b. Define Jacketing technique. Briefly explain the retrofitting of structural member i.e., column by jacketing technique, with a neat sketch. **10** (2 :4: 1.2.1)

(OR)

8. a. Explain in brief about external post tensioning method of retrofitting. **10** (2 :4: 1.2.1)
- b. Briefly explain the retrofitting of structural member i.e., beam by Jacketing technique, with a neat sketch. **10** (2 :4: 1.2.1)

Module-5

9. a. Explain in brief about artificial fibre reinforced polymers CFRP, GFRP and AFRP. **10** (2 :5: 1.2.1)
- b. Briefly explain concrete chemicals and rust eliminators techniques for repair. **10** (2 :5: 1.2.1)

(OR)

- 10 a. Briefly explain the process of vacuum concrete and its application in detail. **12** (2 :5: 1.2.1)
- b. Explain in detail about the process of epoxy injection. **08** (2 :5: 1.2.1)

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