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## Seventh Semester B.E. Degree Examination, July/August 2022 Rehabilitation and Retrofitting of Structures

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Write a short note on:
- Retrofitting
  - Rehabilitation
  - Strengthening
  - Plastic and Drying shrinkage. (12 Marks)
- b. Explain any two chemical causes of concrete structure damage. (08 Marks)

OR

- 2 a. Explain the evaluation of seismic induced damage on concrete structural elements. (10 Marks)
- b. Discuss the classification of various causes for deterioration of concrete structures. (10 Marks)

### Module-2

- 3 a. Define the damage assessment OR condition survey. Discuss in detail the steps involved in damage assessment process. (12 Marks)
- b. Explain the different types of cracks in concrete structure. (08 Marks)

OR

- 4 a. What is non destructive evaluation of concrete elements? Discuss the classification based on testing purposes. (10 Marks)
- b. Explain the tests involved in corrosion potential assessment. (10 Marks)

### Module-3

- 5 a. List the causes for design and construction error in construction. Explain any two causes. (10 Marks)
- b. Briefly explain the effect of climate on concrete deterioration. (10 Marks)

OR

- 6 a. Discuss the provisions and guidelines in IS456-2000 about the durability and five resistance of concrete elements. (10 Marks)
- b. Explain the various corrosion protection techniques in concrete structures. (10 Marks)

### Module-4

- 7 a. Discuss in detail the classification of building maintenance. (10 Marks)
- b. Distinguish between jacketing technique and external post-tensioning method of retrofitting. (10 Marks)

OR

- 8 a. Explain with necessary sketch the externally bonding method of retrofitting. (10 Marks)  
b. Discuss the guidelines of seismic rehabilitation of damaged building. (10 Marks)

**Module-5**

- 9 a. Explain the different types of fiber reinforced polymer composites used for retrofitting. (10 Marks)  
b. Discuss the applications of special concretes in repair and rehabilitation of concrete structures. (10 Marks)

OR

- 10 a. Differentiate between vacuum concrete and shotcrete. (10 Marks)  
b. Write short note on:  
i) Repair of cracks  
ii) Underpinning. (10 Marks)

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