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## Seventh Semester B.E. Degree Examination, Jan./Feb. 2021 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. Discuss the common causes of deterioration of concrete. (10 Marks)
- b. Explain the mechanism of plastic shrinkage and drying shrinkage. List out the preventive measures. (10 Marks)

**OR**

- 2 a. Evaluate the common damages caused to concrete structures due to earthquake loads. (10 Marks)
- b. Explain the mechanism of Carbonation Attack and Sulphate Attack on concrete. List out the preventive measures. (10 Marks)

### Module-2

- 3 a. Explain the general procedure for investigation of damage. (10 Marks)
- b. Explain any two methods of Non – destructive testing. (10 Marks)

**OR**

- 4 a. Write a note on Evaluation of Cracks. (10 Marks)
- b. Explain the test procedure for any two methods of Semi – destructive testing. (10 Marks)

### Module-3

- 5 a. Discuss the causes of failure of structures due to construction errors. (10 Marks)
- b. Explain the process of Corrosion. (10 Marks)

**OR**

- 6 a. Discuss the effects of cover thickness and cracking on corrosion. (10 Marks)
- b. Explain the various corrosion protection techniques. (10 Marks)

### Module-4

- 7 a. Write a note on Seismic rehabilitation of existing structures. (10 Marks)
- b. Explain Column and Beam Jacketing techniques. (10 Marks)

**OR**

- 8 a. Define Maintenance. Enumerate the facts of maintenance and the importance of maintenance. (10 Marks)
- b. Explain : i) External Bonding [ERB] Technique  
ii) Near Surface Mounted [NSM] Technique. (10 Marks)

### Module-5

- 9 a. Discuss the different types of fibres and their role as a repair material. (10 Marks)
- b. Explain Cementitious and Polymer mortars as repair material. (10 Marks)

**OR**

- 10 a. Discuss the classification of repair materials and the selection criteria. (10 Marks)
- b. Explain the methods of repair by :  
i) Resin Injection ii) Stitching iii) Guniting and Shotcreting. (10 Marks)

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