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# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech II Semester End Examinations (Regular) - July, 2018

Regulation: IARE-R16

## REHABILITATION AND RETROFITTING OF STRUCTURES

Time: 3 Hours

(STE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

### UNIT – I

1. (a) Explain the various causes of deterioration in post construction stage. [7M]
- (b) Explain the various categories of deterioration [7M]
2. (a) Define repair, renovation. Differentiate rehabilitation and retrofitting. [7M]
- (b) Explain the causes and stages of distress. [7M]

### UNIT – II

3. (a) Discuss the different mechanisms of damage in hardened concrete. [7M]
- (b) Explain the various causes of damage in fresh concrete and their preventive measures. [7M]
4. (a) Explain in detail about any two corrosion protection methods. [7M]
- (b) What are the advantages and applications of polymer concrete? Explain the process of epoxy injection with a flow chart. [7M]

### UNIT – III

5. (a) How do you experimentally determine the compressive strength and permeability of hardened concrete? [7M]
- (b) Determine electrical resistivity method and its influencing factors. [7M]
6. (a) Describe in detail the damage assessment procedure in structure. [7M]
- (b) Explain the commonly used NDT tests and write its advantages over other tests. [7M]

### UNIT – IV

7. (a) Explain various techniques to repair spalling and disintegrated concrete. [7M]
- (b) Define jacketing. What are the various types of jacketing. Explain them in detail. [7M]
8. (a) Describe in detail about various strengthening methods in concrete. [7M]
- (b) Explain various techniques employed for crack repairing. [7M]

**UNIT – V**

9. (a) What do you mean by health monitoring of structures? Explain the advantages of structural health monitoring. [7M]
- (b) What do you mean by building instrumentation? Why is it required? [7M]
10. (a) Explain the use of smart sensors for monitoring structures. [7M]
- (b) What are the different types of sensors and explain its significance in structural health monitoring? [7M]

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