Hall Ticket No | | | | | | | | | | | Question Paper Code: BST214

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech II Semester End Examinations (Regular) - July, 2017

Regulation: IARE–R16

REHABILITATION AND RETROFITTING OF STRUCTURES

(Structural Engineering)

Time: 3 Hours **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) Define repair, renovation, restoration, rehabilitation and retrofitting. Explain in detail the difference between them. **[7M]**
   (b) What are the uses of repair, rehabilitation and retrofitting? **[7M]**
2. (a) Define distress. Explain different types of distress in concrete structures. **[7M]**
   (b) What do you mean by deterioration? Mention the various causes of deterioration. **[7M]**

UNIT – II

3. (a) Briefly explain **[7M]**
      i. corrosion inhibitors
      ii. cathodic protection
   (b) Discuss in detail the factors effecting corrosion. **[7M]**
4. (a) Explain in detail the mechanisms of damage in fresh state of concrete. Explain various factors effecting hardened concrete. **[7M]**
   (b) Explain the cracking phenomena in plastic concrete. Give the remedial measures. **[7M]**

UNIT – III

5. (a) How do you achieve accelerated strength gain in concrete? **[7M]**
   (b) Explain in detail various NDT tests for assessing corrosion potential of concrete. **[7M]**
6. (a) What are the checks you will make on the day of concreting to ensure quality? **[7M]**
   (b) Explain the need for evaluation of structures. **[7M]**

UNIT – IV

7. (a) Explain the strengthening and stiffening of beams and girders. **[7M]**
   (b) Discuss the method of underpinning in detail. **[7M]**
8. (a) What are the types of repair in concrete structures? Explain in detail. **[7M]**
   (b) What is gunite? Explain its process in detail. **[7M]**

UNIT – V

9. (a) Explain the methodology of health monitoring of structures and how is it monitored. **[7M]**
   (b) Explain the use of smart sensor for monitoring civil engineering infra structures **[7M]**
10. (a) Explain active and passive structural health monitoring of structures and differentiate them. **[7M]**
   (b) Explain various smart materials and its applications in structural health monitoring system. **[7M]**

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