

R13

Code No: 118EB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, April - 2018

REHABILITATION AND RETROFITTING OF STRUCTURES

(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Explain the need for Rehabilitation of structure. [2]
- b) What are structural and non-structural damages in structures? [3]
- c) What is phenomena of desiccation? [2]
- d) What is cathodic protection mean? [3]
- e) Why and when the Non-Destructive Techniques are used? [2]
- f) Enlist various Non-destructive testing methods used for concrete. [3]
- g) What is meant by Jacketing? [2]
- h) Classify retrofitting techniques. [3]
- i) What is Conditional Survey? [2]
- j) Give the process of SHM system. [3]

PART - B

(50 Marks)

- 2.a) Discuss in detail the various construction and design deficiencies which causes distress in the RCC structures.
- b) Explain different types of damages to structures. [5+5]

OR

- 3.a) Explain various preventive measures in controlling distress reinforced concrete structures.
- b) Prepare a checklist showing all important causes of defects and deterioration of a building. [5+5]

- 4.a) Give your suggestions to improve the corrosion resistance of reinforced concrete and steel structure members.
- b) How a steel structure is retrofitted by cathodic protection? [5+5]

OR

- 5.a) Explain the electrochemical process involved in corrosion of steel reinforcement in concrete.
- b) Explain the process of systematic assessment of fire affected structures. [5+5]

AG AG AG AG AG AG AG A

6.a) Illustrate with sketches, any two popular Non-Destructive tests carried out for the assessment of concrete strength as per IS code of standard.

AG b) What is the importance of field and laboratory testing for damage assessment of structure? [5+5] AG A

OR

7.a) What are the various tools for evaluation of distress in concrete structures?

b) Explain the semi-destructive tests for strength estimation of concrete. [5+5]

8.a) Debate on the issues related to material technology while selecting the repair materials for concrete structures.

AG b) Differentiate Global level and local level retrofitting. Explain with neat sketch any popular non-conventional technique of global level retrofitting of RC buildings. [5+5] AG A

OR

9.a) In case of the conditional survey of a building damaged due to earthquake, what are the main points to be taken care while suggesting the strengthening methods?

b) Explain in detail the active and passive repairs in structures. [5+5]

10.a) What do understand by Structural health monitoring (SHM) and state its advantages

AG b) Explain the use of smart sensing technology for structural health monitoring. [5+5] AG A

OR

11.a) Explain the components of SHM system and use of sensors in SHM.

b) Explain the survey procedure and assessment of structural conditions in RCC structures. [5+5]

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