

R15

Code No: 128EB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, May - 2019

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) List out the reasons for formation of cracks in RC structures. [2]
- b) Discuss about the environment effects which leads to deterioration of concrete structure. [3]
- c) Give some examples for corrosion inhibitors. [2]
- d) How deterioration occurs due to corrosion of steel in concrete? [3]
- e) What is the working principle of UPV? [2]
- f) Discuss in brief about any two damage investigation methods. [3]
- g) What do you mean by jacketing? [2]
- h) Give a brief note on shoring and underpinning in demolition. [3]
- i) List the advantages of piezoelectric sensors in SHM. [2]
- j) Discuss about fiber optic sensors for measuring response of defect structures. [3]

PART - B

(50 Marks)

- 2.a) Explain under what circumstances premature deterioration of structures take place
- b) Discuss in detail about the damage due to design errors and constructional errors. [5+5]

OR

- 3.a) What are the causes of distress in different members of RC structure and discuss the methods to prevent the distress.
- b) Explain how the materials and workmanship affect the performance of structures. [5+5]
- 4.a) Explain How do you strengthen the heavily corroded RC beams and columns.
- b) Elaborately explain about the effect of temperature on concrete. [5+5]

OR

- 5.a) What is carbonation and discuss about how to assess the carbonation affect in RC structures.
- b) Discuss about fire induced damage in structures and also discuss about repair techniques for the fire damage. [5+5]

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6. Explain about concrete resistivity method for assessing the damage due to reinforcement corrosion. [10]

OR

- 7.a) Explain the step by step procedure to assess the damage in structures. [5+5]
b) Discuss about the rebound hammer technique of testing concrete structures. A

8. Describe the procedure of fusion bonded epoxy coating of rebars with a simple sketch. Also give the advantages and disadvantages. [10]

OR

9. Discuss the repair methodology
a) Epoxy injection
b) Corrosion protection methods. [5+5] A

10. What are the components of data acquisition system used in static and dynamic testing and discuss about their functioning in health monitoring. [10]

OR

11. Discuss in brief about different dynamic field tests for the health monitoring of structures. [10]

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