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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

First Semester, M. Tech - Civil Engineering (MCAD)

Semester End Examination; Jan. - 2020

Rehabilitation of Structures

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. List and explain in detail the classification of maintenance work of a structure. 10
- b. What is the necessity of maintenance of a structure? 10
- 2 a. During physical inspection, what are the observations to be recorded by a repair engineer? 10
- b. What are the defects occur due to painting? Explain in detail. 10

UNIT - II

- 3 a. Explain the various causes for deterioration of concrete in structures. 10
- b. Describe the different techniques to protection of corrosion in concrete structures. 10
- 4 a. Explain the process of electrolytic corrosion of steel in concrete member. 10
- b. What are the various chemical attacks on concrete? Explain any two of them. 10

UNIT - III

- 5 a. List the various NDT conducted during rehabilitation. What are their importance? 10
- b. Explain Ultrasonic pulse velocity test to determine the hardened concrete properties. 10
- 6 a. What is load testing? Under what circumstances load testing is recommended? Explain how this testing is conducted for slab? 10
- b. What do you mean by semi destructive testing of structures? Explain any two of them. 10

UNIT - IV

- 7 a. Explain the following: 10
- i) Sulphur infiltrated concrete 10
- ii) Epoxy mortar and concrete 10
- b. Explain compatibility of a repair material and its importance. 10
- 8 a. Explain the use of polymer coating and rust eliminators for rebar. 10
- b. List the various material used for repair of concrete against leakage. What are their requirements? 10

UNIT - V

- 9 a. Explain with example the "Method of External reinforcing" to repair a concrete member crack. 10
- b. What do you mean by surface preparation? Explain step by step method of surface preparation. 10
- 10a. With neat diagram, explain dry pack and epoxy bonded dry pack repair technique. 10
- b. Define shortcrete. What are its advantages and disadvantages? 10