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Seventh Semester B.E. Degree Examination, Feb./Mar. 2022 Rehabilitation and Retrofitting of Structures

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Classify the agencies which lead to lack of durability of Reinforced concrete structures. (08 Marks)
- b. Describe the following:
- Repair
 - Retrofitting
 - Strengthening
 - Rehabilitation. (08 Marks)

OR

- 2 a. Through a schematic diagram illustrate the load carrying capacity and damage class for a ductile beam member subjected to earthquake forces. (08 Marks)
- b. Explain the phenomena of carbonation in concrete with chemical equations, its manifestations and effect on R.C. structures. (08 Marks)

Module-2

- 3 a. Identify the conditions under which in-situ nondestructive testing of R.C. structure are conducted. (08 Marks)
- b. Explain the causes of cracking in plastic concrete. (08 Marks)

OR

- 4 a. Discuss the influence of i) Surface condition ii) Moisture content iii) Curing iv) Age of concrete on Rebound Hammer results. (08 Marks)
- b. Through a flow chart explain the main steps of condition assessment of buildings. (08 Marks)

Module-3

- 5 a. Illustrate that, the corrosion of steel in concrete is an electrochemical phenomena. (08 Marks)
- b. Explain the various stages of damages due to corrosion of steel in concrete. (08 Marks)

OR

- 6 a. Organize the codal provisions of IS:456:2000, which address the durability concerns of R.C. structures. (08 Marks)
- b. List the methods of corrosion protection in R.C. structures and explain cathodic protection method. (08 Marks)

Module-4

- 7 a. Describe maintenance of buildings. List the different types of maintenance. (08 Marks)
- b. Distinguish between repairs and retrofitting of structures. (08 Marks)



OR

- 8 a. With a neat sketch, explain the process of retrofitting of column by jacketing technique. (08 Marks)
- b. With neat sketches explain the strengthening of R.C. beam with external post-tensioning method. (08 Marks)

Module-5

- 9 a. Describe the Fiber Reinforced Polymer (FRP) material. List the advantages of FRP. (08 Marks)
- b. List the methods of repairing cracks in R.C. structures and explain stitching method of crack repair. (08 Marks)

OR

- 10 a. List the methods for repairing spalling and disintegrated R.C. structures. Explain Guniting method. (08 Marks)
- b. Explain the step by step procedure for crack sealing using epoxy injection technique. (08 Marks)

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