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Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**EIGHTH SEMESTER B.TECH. DEGREE EXAMINATION (R),MAY 2024****Civil Engineering  
(2020 SCHEME)****Course Code : 20CET454****Course Name : Repair and Rehabilitation of Buildings****Max. Marks : 100****Duration:3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. Discuss the different types of cracks typically observed in R.C. buildings.
2. Enumerate the main objectives of building maintenance.
3. Describe the pre-repair evaluation procedure of damage assessment in concrete structures.
4. What types of information can engineers obtain from analyzing core samples, and how is this information used in assessing the condition of the structure?
5. Explain the thermal properties of concrete.
6. How does cover thickness affect the risk of corrosion in reinforced concrete?
7. Explain the necessity for following maintenance guidelines and rules.
8. List out three major applications of sulphur infiltrated concrete.
9. Explain the mechanism by which embedded steel in concrete undergoes corrosion over time.
10. Explain beam jacketing.

**PART B***(Answer one full question from each module, each question carries 14 marks)***MODULE I**

11. Explain the impact of following factors on masonry structures: 14
  - i) shrinkage and initial expansion
  - ii) foundation movement and soil settlement
  - iii) thermal movement cracks

**OR**

12. Enumerate the primary factors leading to deterioration in masonry structures. Provide an elaborate explanation for five of them. 14

**MODULE II**

13. Explain the following non- destructive testing techniques in detail as per Indian Standards. i) Rebound Hammer Test ii) Ultrasonic Pulse Velocity 14

**OR**

14. Compare and contrast the principles underlying chloride penetration tests and carbonation depth testing in concrete analysis. Highlight their respective strengths, limitations, and applicability in 14

different environmental conditions and structural contexts.

**MODULE III**

15. Explain the various aspects of strength, durability and temperature effects on the quality of concrete structures. 14

**OR**

16. How do acid etching and roto milling methods differ in their approaches to removing contaminants and preparing surfaces? Explain the merits and demerits of each method. 14

**MODULE IV**

17. Explain the various criteria for the selection of repair materials and describe the various compatibility requirements for repair materials. 14

**OR**

18. Describe the main processes involved in gas-forming grouts, self-aluminating grouts, and polymer grouts. How are these processes utilized in different types of grouting applications? 14

**MODULE V**

19. Differentiate non-explosive and explosive demolition techniques. Provide detailed explanations of the wrecking ball method and the concrete sawing method? 14

**OR**

20. Explain the following: 14
- a. Grouting
  - b. Routing
  - c. Dry packing
  - d. Stitching

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