**Q 8333**

M.E. DEGREE EXAMINATION, MAY/JUNE 2006.

*Elective*

Structural Engineering

ST 1630 – MAINTENANCE AND REHABILITATION OF STRUCTURES

(Common to M.E. Construction Engineering and Management)

(Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the properties involved in hardened concrete?

2. What is meant by "Durable Concrete?

3. What are the factors influencing rebar corrosion?

4. Name the various corrosion protection techniques.

5. What is the necessity of maintenance?

6. List the different testing techniques for hardened concrete.

7. Classify the repair materials in terms of its function.

8. What are the methodology used for selecting repair materials?

9. What are the admixtures used in concrete?

10. What is meant by PIC and PMC?

PART B — (5 × 16 = 80 marks)

11. (i) Explain clearly the mechanism with chemical equations involved in the corrosion of steel in concrete.

(ii) Discuss the influence of carbonation and sulphate attack on the durability of the concrete.

12. (a) What are all the agencies causing deterioration in RC structures? Explain the type of distress caused by the different agencies.

Or

(b) Explain in detail plastic shrinkage, drying shrinkage, thermal properties and cracking?

13. (a) Explain briefly the various non destructive testing methods used in assessing the strength and quality of concrete present in reinforced concrete structures.

Or

(b) With a neat schematic diagram, explain the working of ultrasonic pulse velocity equipment and its usage in quality assessment of RC structures.

14. (a) Explain in detail the procedure adopted for the repair of reinforced concrete columns under severe distress.

Or

(b) Discuss the different types of polymer concrete composites. Explain their properties and identify suitable repair applications.

15. (a) Give a complete procedures of epoxy injection to structural crack repair in RC structural elements.

Or

(b) Explain in detail about repair and strengthening of damaged flexural members by plate bonding techniques.

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