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Seventh Semester B.E. Degree Examination, Jan./Feb. 2021 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. Define the terms : Repair, Rehabilitate, Retrofit maintenance. (06 Marks)
b. List the general factors causing the distress in concrete structures. (04 Marks)
c. Briefly explain the three types of surface wear on concrete structures causing deterioration. (06 Marks)

OR

- 2 a. Explain how Alkali Silica reaction causes distress in concrete structures. (08 Marks)
b. Explain the mechanism of deterioration of concrete by freeze and thawing action with neat sketch. (08 Marks)

Module-2

- 3 a. Explain the general procedure of investigating the damage of concrete structure with flow chart. (08 Marks)
b. Explain the procedure and conducting core sampling and its testing. (08 Marks)

OR

- 4 a. Draw the general pattern of cracking in concrete for the following :
i) Plastic settlement
ii) Alkali Aggregate Reaction
iii) Longitudinal cracking in beam
iv) Shear cracks in beam. (08 Marks)
b. Explain clearly the rebound hammer test. List the factors affecting the test. (08 Marks)

Module-3

- 5 a. With the neat sketch, explain the mechanism of chloride induced corrosion. Mention the chemical reactions involved. (10 Marks)
b. Discuss briefly on poor construction practices in site with concrete. (06 Marks)

OR

- 6 a. Briefly explain the following corrosion protection techniques.
i) Epoxy coating
ii) Corrosion Inhibitors (08 Marks)
b. With respect to corrosion of steel in concrete, explain the following :
i) Thickness of cover to concrete
ii) Cathodic protection (08 Marks)



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Module-4

- 7 a. Give the importance of the following related of structures.
- i) Preventive maintenance
 - ii) Remedial maintenance
 - iii) Strengthening
 - iv) Structure enlargement
- (08 Marks)
- b. With the neat sketch, explain the process of Jacketing Technique with reinforced concrete applied to columns. (08 Marks)

OR

- 8 a. Explain the external post tensioning technique on prestressed concrete flexural members. (08 Marks)
- b. List the general retrofitting approaches for the seismic affected building and explain any one. (08 Marks)

Module-5

- 9 a. Give the classification of repair materials. (08 Marks)
- b. Explain the method of repair of crack by stitching. (06 Marks)
- c. List the types of polymer concrete composition. (02 Marks)

OR

- 10 a. Explain the process of shotcreting (Dry mixing process) with the neat sketch. (08 Marks)
- b. Mention the role of the following construction materials :
- i) Latex emulsions
 - ii) Epoxy resins
 - iii) SIFCON
 - iv) Aramid Fibres
- (08 Marks)

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