CBCS SCHEME

USN | | | | | | | | | | |

15CV753

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)**

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) Aranid Fibres **(08 Marks)**

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