

# GBCS SCHEME

18CV824

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**Eighth Semester B.E. Degree Examination, Dec.2023/Jan.2024**

## **Rehabilitation and Retrofitting**

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. What is durability of concrete? How do the following affect the durability of concrete :
- Carbonation
  - Alkali aggregate reaction. (10 Marks)
- b. Explain the following terms :
- Repair
  - Rehabilitation
  - Strengthening
  - Retrofitting
  - Alkali Silica reaction. (10 Marks)

**OR**

- 2 a. Write short notes on :
- Freeze and Thaw on concrete
  - Thermal movement in concrete. (10 Marks)
- b. Define Distress. Explain the types of distress in concrete structures. (10 Marks)

### Module-2

- 3 a. Write short notes on :
- Ultrasonic pulse velocity method
  - Rebound hammer test. (10 Marks)
- b. Explain the general procedure for investigation of damage in concrete structures. (10 Marks)

**OR**

- 4 a. Explain the causes of surface cracking after hardening concrete with the help of flow chart. (10 Marks)
- b. Explain the test procedure for any two methods of semi – destructive testing. (10 Marks)

### Module-3

- 5 a. Explain in detail regarding mechanism of temperature variation in concrete and their remedial measures. (06 Marks)
- b. What preventive measure will ensure protection against corrosion in new structures? (06 Marks)
- c. Explain the importance of concrete cover in RCC structures. (04 Marks)

OR

- 6 a. Explain the effect of wear and erosion on concrete. (10 Marks)  
b. Discuss the causes of failure of structures due to construction errors. (10 Marks)

**Module-4**

- 7 a. Explain column and Beam Jacketing techniques. (10 Marks)  
b. Define maintenance engineering. Explain the classification of maintenance. (10 Marks)

OR

- 8 a. Explain :  
i) External Bonding [ERB] Technique (10 Marks)  
ii) Near Surface Mounted [NSM] Technique. (10 Marks)  
b. With a note on Seismic rehabilitation of existing structures. (10 Marks)

**Module-5**

- 9 a. Discuss the classification of repair materials and the selection criteria. (10 Marks)  
b. Discuss the significance of :  
i) Epoxy resins  
ii) Vacuum concrete. (10 Marks)

OR

- 10 a. Explain the methods of repair by :  
i) Resin injection  
ii) Stitching  
iii) Guniting and shortercreting. (10 Marks)  
b. Discuss the different types of fibers and their role as material. (10 Marks)

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