

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VIII (NEW) EXAMINATION – WINTER 2021****Subject Code:2180607****Date:25/11/2021****Subject Name:Repairs & Rehabilitation of Concrete Structures****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) List and explain in brief various construction errors leading to crack formation and deterioration of concrete. **03**
- (b) Distinguish between Rehabilitation and Retrofitting with examples. **04**
- (c) What are the main objectives of condition assessment of structures? Explain various stages of condition survey in detail. **07**
- Q.2** (a) Define the terms Thermal Conductivity, Thermal Diffusivity and Coefficient of Thermal Expansion with reference to concrete. **03**
- (b) What do you understand by durability of concrete? Enlist the factors affecting durability. **04**
- (c) Explain corrosion mechanism of steel in RCC. List various techniques of corrosion mitigation for RCC. **07**
- OR**
- (c) What do you mean by jacketing? Explain jacketing of column with sketches. **07**
- Q.3** (a) Explain importance of cover in RCC structures. **03**
- (b) Write short note on Expansive cement. **04**
- (c) List out various Non Destructive tests used to determine strength of existing structures. Explain Ultrasonic Pulse Velocity test. **07**
- OR**
- Q.3** (a) Enlist the works which are taken as building maintenance. **03**
- (b) Explain the process of grouting. **04**
- (c) What are the essential parameters of repair material? Classify repair materials based on its application. **07**
- Q.4** (a) Write short note on Vacuum concrete. **03**
- (b) Discuss Sulphur Infiltrated concrete. **04**
- (c) What is meant by carbonation of concrete? What are the factors affecting rate of carbonation and how it is determined in concrete? **07**
- OR**
- Q.4** (a) Write short note on Ferro cement. **03**
- (b) Enlist different crack repair techniques. Explain any one in detail. **04**
- (c) Explain alkali aggregate reaction. What are the factors promoting it? How it can be controlled? **07**
- Q.5** (a) Write short note on Polymer concrete. **03**
- (b) Discuss gunniting technique and its applications in repairing and rehabilitation. **04**
- (c) Explain Rebound Hammer test with neat sketches. **07**
- OR**
- Q.5** (a) Write short note on visual inspection to assess fire damaged structures. **03**
- (b) Write short not on freezing and thawing. **04**
- (c) What is SHM? How SHM can be applied to buildings. Explain in detail. **07**
