

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170616**Date:10-01-2023****Subject Name:Retrofitting of 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.

MARKS

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|------------|-----|---|-----------|
| Q.1 | (a) | What exactly is a condition evaluation? List the objectives of the condition evaluation. | 03 |
| | (b) | Explain the importance of a concrete cover in an RCC structure. Provide IS:456-2000 guidelines for nominal cover. | 04 |
| | (c) | Describe the impact of freezing and thawing on the RCC construction. | 07 |
| Q.2 | (a) | List the reasons why reinforced concrete constructions are distressed. | 03 |
| | (b) | Explain injection grouting for RCC structures. | 04 |
| | (c) | Write a short note on fiber reinforced concrete. | 07 |
| OR | | | |
| | (c) | Give various types of shoring and explain raking shore with sketch. | 07 |
| Q.3 | (a) | List the different thermal characteristics of concrete and describe the thermal expansion coefficient. | 03 |
| | (b) | Make a brief note about vacuum concrete. | 04 |
| | (c) | List different methods for repairing cracks and describe the process using stitching. | 07 |
| OR | | | |
| Q.3 | (a) | Justify the necessity of doing a structure's lifetime condition assessment. | 03 |
| | (b) | How do you repair a leak through the terrace? | 04 |
| | (c) | List the different construction faults that cause concrete structures to deteriorate. | 07 |
| Q.4 | (a) | List the various non-destructive testing techniques and describe the working of any one of the NDT test methods. | 03 |
| | (b) | Make a brief note on the fiber wrap method. | 04 |
| | (c) | Write a detailed explanation about one strengthening technique for beam. | 07 |
| OR | | | |
| Q.4 | (a) | List the different kinds of physical and chemical degradation that may be seen in concrete constructions. | 03 |
| | (b) | List the various variables to consider when choosing a repair technique and the actions to take to achieve an efficient repair. | 04 |
| | (c) | Define and explain the alkali-aggregate reaction. | 07 |
| Q.5 | (a) | Mention various symptoms of distress observed in a deteriorated concrete structure. | 03 |
| | (b) | Write a brief note about the fluid transport mechanism in concrete. | 04 |
| | (c) | Describe the mechanism through which concrete structure corrode. | 07 |

OR

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|------------|------------|---|-----------|
| Q.5 | (a) | What measures will you take to repair a deflected RCC slab? | 03 |
| | (b) | How would you assure quality control in the construction of concrete? | 04 |
| | (c) | Write a brief note about underwater repairs. | 07 |
