



Paper id: 250774

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Subject Code: BCE063

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BTECH
(SEM VI) THEORY EXAMINATION 2024-25
REPAIR AND REHABILITATION OF STRUCTURES

TIME: 3 HRS

M.MARKS: 70

Note: Attempt all Sections. In case of any missing data; choose suitably.**SECTION A****1. Attempt all questions in brief.****02 x 7 = 14**

Q no.	Question
a.	Mention two common causes of deterioration in RCC structures
b.	Name any two factors that affect the permeability of concrete.
c.	What is ferrocement and where is it used?
d.	What kind of repairs are needed for marine-exposed structures?
e.	What is meant by "low member strength" and how is it addressed?
f.	What is the role of data acquisition systems in health monitoring?
g.	What is the difference between repair and rehabilitation in concrete structures?

SECTION B**2. Attempt any three of the following:****07 x 3 = 21**

a.	Explain the causes of distress in concrete structures with examples.
b.	Explain the mechanism of corrosion and how it impacts the durability of reinforced concrete.
c.	Write short notes on the following: I. Fiber Reinforced Concrete Bacterial Concrete
d.	Compare and contrast repair and strengthening of structures. When should retrofitting be preferred over regular repair?
e.	Compare and contrast various Non-Destructive Testing (NDT) techniques used in long-term health monitoring. Which techniques are best suited for different types of structures and why?

SECTION C**3. Attempt any one part of the following:****07 x 1 = 07**

a.	List and explain the major causes of deterioration in concrete structures. How does environmental exposure contribute to deterioration?
b.	Describe the step-by-step procedure for condition assessment of a damaged concrete structure. Mention the tools and techniques commonly used.

4. Attempt any one part of the following:**07 x 1 = 07**

a.	Discuss the factors affecting the durability of concrete structures in aggressive environmental conditions. Explain the influence of temperature variations, chemical exposure, and corrosion on long-term performance
b.	Describe the relationship between concrete strength, permeability, and durability. How does a low water-cement ratio influence these properties?

5. Attempt any one part of the following:**07 x 1 = 07**

a.	Explain the use of special concrete and materials used in repair with suitable examples.
b.	Differentiate between Guniting and shotcrete. Also explain about epoxy injection.



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6. Attempt any one part of the following:

07 x 1 = 07

a.	Explain in detail the procedure and importance of jacketing as a retrofitting technique. Discuss different types of jacketing with sketches.
b.	Discuss the repair method adopted for RCC structures showing signs of surface cracking and cover spalling due to reinforcement corrosion.

7. Attempt any one part of the following:

07 x 1 = 07

a.	Discuss the importance of long-term structural health monitoring and the different types of sensors used for building instrumentation. How do these sensors contribute to preventive maintenance?
b.	Discuss the safety and environmental considerations that must be addressed during the engineered demolition of old buildings.

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