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**Question Paper Code : X10228**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020 AND  
APRIL/MAY 2021  
Seventh/Eighth Semester  
Civil Engineering  
CE 8020 – MAINTENANCE, REPAIR AND REHABILITATION OF  
STRUCTURES  
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Bring out the difference between repair and rehabilitation of a concrete structure.
2. List the aspects of inspection to be carried out during and after the construction of a structure.
3. Mention the various limiting crack width for structures exposed to environmental conditions recommended as per IS 456-2000.
4. How does a concrete structure get affected by heat ?
5. Write the advantages of using reactive powder concrete in structures.
6. What is the effect of adding discrete fibres in concrete ?
7. Enumerate the criteria for the selection of materials for repair and rehabilitation of a concrete structure.
8. How do you protect the steel structures from corrosion ?
9. What are the causes of dampness in concrete buildings ?
10. State the uses of fibre optic sensors in concrete structures.

PART – B

(5×13=65 Marks)

11. a) Discuss the facets, importance and necessity of maintenance of a concrete structure.

(OR)

- b) With a flowchart, explain the damage assessment procedure for evaluating the damaged RC structure.



12. a) Describe in detail how the plastic and drying shrinkage can be reduced in RC structures.

(OR)

b) Present a detailed note on the errors due to design and detailing of a concrete slab. Also, explain its consequences that affect the structure.

13. a) What is meant by SIFCON ? Discuss its various applications in the construction industry.

(OR)

b) Elucidate in detail the manufacturing process of geopolymer concrete.

14. a) What is meant by underpinning ? Describe in detail the various methods available for underpinning.

(OR)

b) Describe the procedure for fusion bonded epoxy coating of rebars with a suitable sketch. Also mention its advantages and disadvantages.

15. a) Discuss the preliminary investigation should be carried out for the demolition of a concrete building.

(OR)

b) Discuss in detail how are seismically damaged columns can be retrofitted.

**PART – C**

**(1×15=15 Marks)**

16. a) In a deck slab of an old concrete bridge, cracks were observed due to heavily loaded vehicles. Suggest and describe a suitable retrofitting technique for the bridge structure.

(OR)

b) Identify the process to evaluate, repair and rehabilitate the piers of a concrete bridge distressed due to corrosion. Discuss in detail.

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