

**BTCVSS 801D Maintenance and Repair of Concrete Structures  
Question Bank**

**MODULE 1**

1. Explain the necessity of maintenance activities in structural operations.
2. Elaborate the repair aspects in concrete structures.
3. What is the significance of corrosion?
4. Explain corrosion of steel.
5. Explain embedded metal corrosion.
6. Explain cracking phenomena in concrete structures.
7. Elaborate corrosion induced cracking, delamination and spalling in buildings.
8. Explain carbonation induced corrosion.
9. Elaborate corrosion mechanism.
10. What are the different types of cracks in buildings?
11. Explain types of rebars.
12. Explain FRP rebars.
13. Explain corrosion of prestressed concrete.

**MODULE 2**

1. Explain the concept of Supplementary cementitious materials.
2. Explain durability aspects of concrete.
3. Elaborate the use of chemical admixtures in concrete.
4. Explain the deterioration mechanism of concrete systems.
5. Elaborate the sources of sulphate in concrete.
6. Explain the mechanism of sulphate attack in concrete.
7. Explain the process of prevention of sulphate attack.
8. Elaborate the process of deterioration of concrete due to acids.
9. How to prevent acid attack?
10. Explain the process of shrinkage on concrete structures.
11. Explain the process of deterioration due to ASR reaction.

**MODULE 3**

1. Explain the service and exposure conditions of concrete.
2. Elaborate the steps of condition assessment of concrete structures.
3. How to conduct visual inspection in concrete structures?
4. Explain the aspects of deciding whether to preserve, repair or demolish the concrete structures.
5. Elaborate the test methods for concrete evaluation.
6. Explain the process of locating Delaminated concrete.
7. Explain the Ultrasonic pulse velocity test.
8. Explain the process of the rebound hammer test.
9. Explain water sorptivity test.
10. Explain methods of strength evaluation concrete structures.

11. Explain the microstructural assessment of concrete.
12. Explain the significance of non destructive testing of concrete.
13. Elaborate various challenges associated with concrete assessment.

#### **MODULE 4**

1. Explain the surface repair strategies in concrete.
2. Explain the surface repair materials for concrete.
3. Elaborate the concrete surface repair types.
4. Explain the types of stresses in concrete.
5. Elaborate surface repair performance requirements.
6. What is corbel repair?
7. Explain column repair process.
8. Explain bridge deck repair process.
9. Explain the aspects of selecting repair material.
10. Explain the significance of load carrying capacity of repair material.
11. Explain the significance of service/exposure properties of repair material.
12. Explain the significance of constructability of repair material.
13. Explain electro-chemical chloride extraction.
14. Explain material selection for ECE.
15. Explain electrochemical Re-alkalisation.
16. Explain placement and curing of repair materials.

#### **MODULE 5**

1. Explain the difference between strengthening and stabilisation.
2. Explain the necessity of strengthening and stabilisation.
3. Explain the types of upgradations.
4. Elaborate factors affecting strengthening and stabilisation.
5. Explain passive and active strengthening.
6. Explain flexural strengthening methods.
7. Explain section enlargement.
8. Explain use of FRP composites in strengthening .
9. Explain use of bonded steel plates in strengthening.
10. Explain external post tensioning.
11. Explain span shortening.
12. What are the various methods of strengthening columns?
13. Explain stress reduction techniques for columns.
14. Elaborate different failure modes of walls.
15. Explain methods to strengthen concrete walls.
16. Explain various joints in concrete.
17. Explain the significance of Injection grouts for concrete repairs.
18. What are the various codes, guidelines and standards for concrete repairs.

