

CE8020 MAINTENANCE, REPAIR AND REHABILITATION OF STRUCTURES

IMPORTANT QUESTIONS AND QUESTION BANK

UNIT-I MAINTENANCE AND REPAIR STRATEGIES

2-Marks

1. Define Maintenance
2. Define Repair.
3. Define Rehabilitation.
4. What are the two facets of Maintenance?
5. Differentiate between the terms Maintenance and Rehabilitation.
6. Discuss briefly about dormant crack and active crack.
7. Write the importance of Maintenance of structures.
8. Classify the types of Maintenance.
9. Assess the need for special maintenance of structures.
10. Explain why inspection is needed for damaged structure.
11. Criticize about weekly and monthly maintenance.
12. Describe any four causes of deterioration of structures.
13. List out the steps involved in selecting a repair procedure.
14. Assess the various aspects to be investigated during inspection of existing building.
15. Under what circumstance premature deterioration of concrete takes place? Summarize.
16. What is the physical inspection performed on damaged structure?
17. List out the factors to be considered by the designer at the construction site.
18. Show the possible decision that can be made after evaluating the strength of a structure.
19. Explain about the requirements of period maintenance considering the monsoon season.
20. How will evaluate the cause for deterioration of concrete structure.

13-Marks

1. With a flowchart explain the assessment procedure for evaluate damages in a structure.
2. List out various types of maintenance operation and explain it in detail.
3. Different types of maintenance to the structural elements.
4. With graph explain the service life behaviour of concrete structures.
5. What is maintenance? Explain the importance of maintenance.

6. Identify the various steps involved in the systematic approach of investigations and the factors to be ascertained.
7. Examine the various causes of distress in concrete structures mentioning its effects.
8. Criticize in detail about the preventive aspects of maintenance.
9. Develop a flow chart for structural appraisal and economic appraisal of a building.
10. Describe the various repair strategies for RC buildings.
11. Differentiate between repair and maintenance of building.
12. 1. Discuss about the facets of maintenance.
2. Write down the types of inspection carried out for concrete structure.
13. Analyse the work involved in rehabilitation work of a structure.
14. Elaborate the steps involved in diagnosing the problem in a structure.
15. Describe in detail about the repair aspect of maintenance.

UNIT-II STRENGTH AND DURABILITY OF CONCRETE

2-Marks

1. Define the term "Quality assurance" in concrete structures.
2. List out the requirements of quality management system.
3. Discuss the importance of quality control.
4. How thermal variations affect the durability of structures?
5. Discuss about the inspection checks performed during quality audit.
6. Write a note on structural cracks with examples.
7. What are the factors affect the durability of concrete?
8. Classify the types of cracks based on its thickness.
9. Discuss about segregation in concrete.
10. Explain the effect of bleeding on the durability of concrete.
11. Define aggregate splitting.
12. How does a concrete structure get affected by heat?
13. Define corrosion.
14. Discuss about the sustained elevated temperature.
15. Examine the methods to control the cracks.
16. Define durability and name two test to assess durability of concrete.
17. Define corrosion inhibitor. Give some examples for corrosion inhibitors.
18. Explain the effect of bleeding on the durability of concrete.
19. Write down the result of poor construction practices.
20. Distinguish between structural cracks and non-structural cracks.

13-Marks

1. Why quality assurance for structure is needed? List out the components of quality assurance for building and explain it in detail.
2. List the various parameters affecting the quality of concrete construction. Explain any three in detail.

3. Explain different types of cracks found in concrete structure. Also list the remedial measures.
4. Discuss in detail about the various design error effecting the quality of concrete structures.
5. Elaborately explain about the effect of temperature on concrete.
6. What is crack? Explain the classification and causes of cracks.
7. Identify the checks you will make on the day of concreting to assure quality of concrete.
8. Explain about the design and constructional errors for concrete building.
9. Analyse the various method of corrosion in protection of rebar.
10. Explain in detail the effects on durability and strength of concrete due to
 - 1)climate
 - 2)chemical
11. Give a detailed note on the property "strength" of concrete discussing its influencing factors and discuss any two with methods to enhance it.
12. With chemical equation how will you evaluate the mechanism of corrosion
13. Write short note on structural cracks.
14. Explain in detail about the requirements, mechanism and components of quality management system.
15. Discuss about the effect of sustained elevated temperature on concrete and steel.

UNIT-III SPECIAL CONCRETES

2-Marks

1. Mention a salient feature and an application of polymer concrete.
2. Name the various monomers used in polymer impregnated concrete.
3. List the various monomers used in polymer cement concrete.
4. List the various types of polymer concrete.
5. List out the applications of sulphur infiltrated concrete.
6. Define aspect ratio.
7. What do you mean by critical length of fibre.
8. Discuss about FRC.
9. List out the fields in which polymer impregnated concrete has a wide application.
10. Write notes on concrete made with industrial wastes.
11. Write notes on vacuum concrete and self- compacting concrete.
12. Discuss in short about SIFCON
13. What are the applications of special concretes?
14. Give short notes about the reactive powder concrete.
15. Write down the uses of ferro cement.
16. Discuss about the disadvantages of FRP.

17. Describe the various types fibres used in FRC.
18. For which precast units are sulphur infiltrated concrete.
19. Differentiate between polymer impregnated concrete and polymer partially impregnated concrete.
20. Enumerate the methods of producing high strength concrete.

13-Marks

1. How polymerization is achieved in polymer concrete? Explain in detail.
2. Describe the following type of concrete
 1. High performance concrete
 2. Sulphur infiltrated concrete.
3. Explain the types of fibers used in concrete with its advantages and disadvantages.
4. Write short note on self-compacting concrete and its applications.
5. Write short notes on the manufacturing process and applications of Sulphur infiltrated concrete.
6. Explain the manufacturing process, properties and uses of High-performance Sulphur infiltrated concrete.
7. Write short notes on Geopolymer concrete.
8. Illustrate about Fiber reinforced concrete.
9. Describe in detail the properties and application of polymer concrete.
10.
 1. Describe in detail about the reactive powder concrete.
 2. Write a note on polymer impregnated concrete.
11. Explain the behavior of steel fibre reinforced concrete as a repair material.
12. Explain in detail about special material manufacturing procedure and application of polymer modified concrete.
13. List the methods of testing self-compacting concrete and explain the methods in detail.
14. Explain the following
 1. High strength concrete
 2. vacuum concrete.
15.
 1. How ferro cement can be used as a material for repair
 2. List out the properties and uses of Ferro cement.

UNIT-IV TECHNIQUES FOR REPAIR AND PROTECTION METHODS

2-Marks

1. Define shoring and write its purpose.
2. What is the fundamental principle behind rebound hammer test?
3. Explain stitching method of repairing crack.
4. List out some of the corrosion protection methods.

5. Classify the types of shoring.
6. Brief the mechanism of cathodic protection.
7. List out the types of corrosion inhibitors.
8. What is the various purpose for which ultrasonic pulse method could be adopted?
9. Name two non-destructive tests used for assessing the quality of concrete.
10. Discuss about the process of Guniting and shotcrete.
11. Explain the types of corrosion resistant steel.
12. Describe the properties of coating materials.
13. Discuss about stitching.
14. Write short note on dry pack.
15. Write note on jacketing.
16. Illustrate an example for corrosion inhibitors and corrosion coating.
17. Write short note on galvanizing of steel.
18. Differentiate between shoring and underpinning.
19. Distinguish between Guniting and shotcrete.
20. What do you mean by weathering corrosion?

13-Marks

1. Identify the non-destructive testing equipments and describe in detail.
2. State the uses of surface hardness method and explain it with neat sketch.
3. Define shoring and explain the types of shoring with neat sketch.
4. State the purpose of underpinning and explain its method with neat sketch.
5. Explain the various method of polymer coating applied on the surface of rebar.
6. Discuss about
 1. Impact echo test
 2. Carbonation test.
7. Describe the procedure of fusion bonded epoxy coating of rebars with a simple sketch. Also give the advantages and disadvantages.
8. Estimate the following NDT techniques as per IS
 1. Rebound hammer test.
 2. Ultrasonic pulse velocity.
9. Explain in detail the types of corrosion protection methods.
10. Summarize the process of epoxy injection. Also explain routing and sealing with sketches.
11. Write short notes on:
 1. Protective coating for reinforcement
 2. Types of corrosion resistant steels.
12. Examine the method of preventing corrosion in the structure.
13. Explain how cracks may be sealed by using epoxy injection.
14. Analyse the mechanism of the following corrosion protection methods.
 1. Corrosion inhibitors
 2. cathodic protection.
15. Define the term underpinning. Discuss any two of its methods mentioning its applicability.

UNIT-V REPAIR, REHABILITATION AND RETROFITTING OF STRUCTURES

2-Marks

1. List the methods to overcome low member strength in concrete structures.
2. State the need of accelerated strength.
3. List the pre-planning activities to be done before demolition of a structure.
4. List out types of demolition techniques.
5. Name any two atmospheric agents responsible for corrosion.
6. List out the repairing methods of excessive deflection of beams.
7. Discuss about the external post tensioning.
8. Describe the types of cracks repairing techniques.
9. What are the effects of fire on concrete?
10. Illustrate the term weathering corrosion.
11. Write short note on leakage in structure.
12. Illustrate the term dilapidated structures.
13. When do you demolish a building?
14. What is meant by structural health monitoring?
15. Discuss about hydro-demolition technique.
16. List out various techniques to repair spalling and disintegration of concrete.
17. Identify the factors to be considered while transporting a structure from one place to another?
18. Why is meant by structural health monitoring.
19. How do you determine the temperature attained by concrete during fire?
20. Suggest the guidelines for construction in different seismic zones.

13- Marks

1. With simple sketch explain the methods of improving the load carrying capacity of existing column and beams.
2. Briefly explain the measure to be taken during construction to minimize the damages due to earthquake.
3. How do you repair a structure distressed due to corrosion? Explain in detail.
4. How do you repair a structure distressed due to marine exposure?
5. Explain different methods of strengthening the concrete structures against earthquake.
6. With simple sketches explain the methods of improving the strength of existing columns and beams.
7. How do you repair and rehabilitate a structure distressed due to fire?
8. Describe the types of cracks repairing techniques with neat sketch.
9. Explain briefly about the demolition techniques.

10. Under that condition strengthening of foundation is required? Explain how columns by section enlargement technique with the help of neat sketch.
11. State and explain the various option for strengthening a concrete with low member strength.
12. How do you strengthen a heavy corroded RCC beam in structure?
13. Illustrate how the building is affected by,
 1. High temperature
 2. Marine exposure.
14. Discuss the following methods of crack repair.
 1. Concrete replacement
 2. mortar replacement.
15. Discuss the different methods of strengthening the concrete structures against earthquake.

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