VALLIAMMAI ENGINEERING COLLEGE

KATTANKULATHUR

CN7001-ADVANCED CONCRETE TECHNOLOGY

QUESTION BANK

Prepared by

Mr.P.ELANGOVAN

Assistant Professor
Department of Civil Engineering

Unit –I

CONCRETE MAKING MATERIALS

Part-A

1. What is the common classification of aggregates?
2. What is Light weight aggregates?
3. Define Heavy weight aggregates.
4. Define Aggregate.
5. Mention the Classification of aggregate In accordance with size.
6. Mention the Classification of aggregate In accordance with source.
7. What are the properties of Aggregate?
8. Give the Grading of aggregates.
9. Define Fineness modulus of aggregate.
10. Define Fineness modulus for blending of aggregates.
11. What are the Physical Quality requirements Of aggregates.
12. What are the Various test which are to be done on aggregates ?
13. What is the chemical composition of cement?
14. List various types of cement.
15. What is grade of cement? List any three grades of cement with their strengths.
16. Give step by step method of manufacture of cement by wet process.
17. What is meant by proportioning of concrete?
18. Can sea water be used for making concrete? Explain.
19. What is meant by curing of concrete?
20. What is mean by controlled concrete?
21. What is a slump test?
22. What is meant by hydration of cement?
23. What are the two process of manufacturing of Cement?

Part - B

1. Describe the importance of the quality of water used for concreting.
2. How does increasing the quantity of water influence the properties of fresh and hardened concrete?
3. Classify the various concrete chemical based on their use.
4. Distinguish between plasticizers and super plasticizers.
5. Explain in detail of any three tests for Fresh Concrete.
6. Explain in detail of any three tests for Hardened Concrete.
7. List the different types of workability aids.
8. What are the various factors which affect the workability of concrete?
9. Describe the hydration reaction of important Bogue compounds indicating the products of hydration.
10. What are the stages of transformation of fresh concrete to hardened concrete?
11. Describe the process of manufacture of cement by wet process.
12. Describe the process of manufacture of cement by dry process.
13. Explain in details the various specifications of concrete.
14. Explain in detail of any three tests for aggregates.
15. Explain in detail of any three tests for cement.

UNIT – II
TESTS ON CONCRETE
Part-A

1. Mention the Properties of concrete at Early Ages.
2. What are the Causes of bleeding and segregation?
3. What are the Methods for Control of Bleeding?
4. Define Workability
5. Is Concrete Really Elastic?
6. Why is Elastic Moduli Important for Concrete?
7. Define concrete Expansion and shrinkage.
8. Define Shrinkage cracking
9. Define Plastic Shrinkage cracking
10. Define Tension cracking
11. Define Creep.
12. What is setting?
13. What is Hardening?
14. How the concrete strength has measured?
15. What are the Factors affecting concrete strength?
16. Define Concrete porosity.
17. Define Water/cement ratio**.**
18. What do you mean by Soundness of aggregate?

Part -B

1. Explain how you would determine the various elastic moduli for concrete.
2. Explain the significance of quality control.
3. What are the reasons for the cracking of concrete and how does it affect durability?
4. What do you understand by carbonation of concrete? How is it tested?
5. What are the various types of chemical attacks encountered by concrete?
6. What precautions can be taken to ensure good quality concrete in coastal structures?
7. What are the physical deteriorating influences on concrete?
8. How does freeze-thaw damage occur?
9. Explain the factors which influence corrosion?
10. What is cathodic protection and when is it applied?
11. What physical tests could be done to confirm the efficiency of the epoxy joint?
12. Write short notes on the following: Acid attack
13. Write short notes on the following: Sulphate attack
14. Write short notes on the following: Alkali attack
15. Explain the methods of reinforced concrete repair techniques.
16. Explain the importance of weathering of concrete.

Unit –III
MIX DESIGN
Part- A

1. Define Concrete Durability.
2. Define concrete mix design.
3. What are the factors influencing the selection of materials?
4. Write the Factors Influencing Consistency.
5. What are the Factors affecting Strength of Hardened concrete?
6. What are the sequence of steps should be followed in ACI method?
7. What are the of the principal properties of “good” concrete?
8. Mention the Maximum aggregate size to be used in Mix Design as per ACI.
9. What are the Requirements of concrete mix design as per BIS?
10. Give the types of concrete mixes.
11. Define Nominal Mixes
12. Define Standard mixes
13. What is Designed Mixes?
14. What are the Factors affecting the choice of mix proportions?

Part-B

1. Explain the Design Procedure for IS method of Concrete Mix Design.
2. Describe about the Sampling and Acceptance criteria
3. Write any one procedure for determining concrete mix design
4. Design the concrete mix for grade M20 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.
5. Explain the factors that influence the choice of mix design.
6. Explain in detail about the statistical quality control and acceptance criteria of concrete.
7. Describe the procedure in adopting ACI method of concrete mix design.
8. Describe the procedure in adopting IRC method of concrete mix design.
9. Design the concrete mix for grade M30 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.
10. Design the concrete mix for the following data: characteristic compressive strength = 20MPa, maximum size of aggregate = 20mm (angular), Degree of workability = 0.9 CF, Degree of quality control = good and type of exposure = severe. Water absorption by CA = 0.5% and moisture content in FA = 2.0%. Assume any suitable missing data.
11. Explain the procedure of selection of constituent materials of concrete.
12. Describe the recent trends in concrete mix design.
13. Design the concrete mix for the following data: characteristic compressive strength = 35MPa, maximum size of aggregate = 20mm (angular), Degree of workability = 0.9 CF, Degree of quality control = good and type of exposure = severe. Water absorption by CA = 1% and moisture content in FA = 1.5%. Assume any suitable missing data.

Unit – IV
SPECIAL CONCRETE
Part-A

1. Define Aerated Concrete
2. What is the general use of Shotcrete?
3. What is meant by No fine concrete?
4. What do you mean by Fibre Reinforced Concrete?
5. Define ferro-cement.
6. What is self-compacting concrete?
7. State the effects of concrete in cold weather Slower Strength Gain
8. What are the functions of formwork?
9. Define hot weather concreting.
10. Define cold weather concreting.
11. What are the methods used for consolidating concrete?
12. What are the uses of polymer concrete?
13. What are the advantages of using high-strength concrete?
14. What are the various parameters affecting the strength of concrete?

Part –B

1. What are the various methods of underwater construction? Explain.
2. What are the effects of cold weather concreting and hot weather concreting?
3. How can high-strength concrete be classified? Explain.
4. List the differences between polymer – impregnated concrete, polymer – modified concrete, and polymer concrete.
5. What are the various quality control tests done to ensure good performance of polymer concrete?
6. What are the basic properties of fibre – reinforced concrete which can be advantageously made use of in the design of structural elements?
7. In what way can the behavior of FRC can be used for seismic – resistant design?
8. Explain in detail the method of design of light weight concreting.
9. Describe the procedure of mass concrete.
10. Describe the procedure of Shotcrete.
11. Describe the procedure of Grouting.
12. Explain the properties of polymer Impregnated Concrete.
13. Describe the method of manufacturing of high density concrete.
14. Explain the design aspects of aerated concrete.
15. Explain the various methods of polymer concrete.

Unit – V
CONCRETING METHODS
Part-A

1. What is batching of concrete?
2. Define weigh batching.
3. What is volume batching?
4. What is the use of chute in concreting?
5. What are belt conveyors?
6. Define mixing time of concrete.
7. What is retempering?
8. State any two uses of wheel barrow.
9. What is hoist?
10. Define revibration.
11. What is surface treatment of concrete?
12. Define curing.

PART B

1. Explain the role of formwork in the quality of concrete construction.
2. What type of equipment is used for placing concrete? In what way does this equipment avoid segregation during placing?
3. Describe the various aspects of pumping concrete.
4. What are the precautions to be taken while adopting the steam curing method?
5. Describe the method of slipform paving and state its advantages.
6. What are the advantages of using ready mixed concrete instead of site mixed concrete?
7. What are the properties of materials used for mass concrete?
8. Explain the batching process of concrete.
9. Explain in detail the control facilities of concrete jobs.
10. What are the methods of transportation of concrete? Explain any 5 of them.
11. Explain finishing method in concrete surfaces.
12. Describe the method of steam curing.
13. Explain the method of pumping of concrete.
14. Describe the compaction method of concrete.
15. Explain the various methods of batching in concrete.
16. Explain transportation and placing procedure in concrete