



- 
- Notes :
1. All questions carry equal marks.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) What are the different test of cement? Explain any one in detail. 8
- b) Explain in brief hydration of composite cement. 8

**OR**

2. a) What are different physical properties of aggregate? 8
- b) What is the bulking of sand? State the procedure to find out bulking of sand. 8
3. a) What are the factors that affecting creep and shrinkage of concrete? 6
- b) Distinguish between segregation and bleeding and explain in detail. 5
- c) State name of IS codes of specification and test of aggregate. 5

**OR**

4. a) Write note on curing of concrete. 5
- b) What is fineness modulus and also discuss its importance in concreting? 6
- c) What are the factors affecting workability? 5
5. a) Explain about water cement ratio and Abram's law. 6
- b) Identify the factors affecting strength of concrete. 5
- c) What is aspect ratio and discuss its importance? 5

**OR**

6. a) Enlist various NDT. Also explain any one detail. 8
- b) How would you determine the flexural strength of concrete, Discuss with neat sketch. 8

7. a) Explain different type of admixtures used in concrete. 6
- b) What are the methods of controlling sulphate attack? 5
- c) State different factors contributing cracks in concrete. 5

**OR**

8. a) Write short note on- 10
- i) Super Plasticizer
- ii) Air entraining agents
- b) What is the effect of calcium chloride on concrete? 6
9. a) What are the different factors affecting concrete mix design? 8
- b) Define the term “Mix Design of Concrete” and explain its significance. 8

**OR**

10. Design a concrete mix design of M-25 grade. Take standard deviation 5MPa. The specific gravity of CA and FA are 2.75 and 2.60 respectively. The bulk density of CA is 1610kg/cum. 16
- Assume any data whenever required.
- Specific gravity of cement = 3.10.
- Water absorption of CA = 0.80% and FA = 1.10%.

\*\*\*\*\*