

B.E. Civil Engineering (Model Curriculum) Semester-IV  
**PCCCE402 - Concrete Technology**

P. Pages : 2

Time : Three Hours



**GUG/W/23/13716**

Max. Marks : 80

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- 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) Briefly explain different types of cement. 5
- b) Explain heat of hydration and hydration process of cement in detail. 5
- c) What are different test of cement? Explain any one in detail. 6

**OR**

2. a) What are different physical properties of aggregate? 6
- b) Explain the term Fineness modulus for coarse and fine aggregate. 5
- c) Explain water quality required for mixing and curing of concrete. 5
3. a) What is Shrinkage of concrete? 4
- b) What are the factors that affecting creep & shrinkage of concrete. 7
- c) State name of IS codes of specification & test of aggregate. 5

**OR**

4. a) What are different factors affecting workability of concrete. 5
- b) Explain with neat sketch "Slump Cone Test". 5
- c) Write note on curing of concrete. 6
5. a) What is aspect ratio and discuss its importance. 5
- b) Differentiate between cube strength and cylindrical strength of concrete. 6
- c) Explain about water – cement ratio and Abram's law. 5

**OR**

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

7. a) State different factors contributing cracks in concrete. **8**  
b) State and explain different types of admixtures. **8**

**OR**

8. Write note on: **any three.** **16**

- i) Calcium chloride in concrete
- ii) Carbonation
- iii) Super Plasticizer
- iv) Air entraining Agents

9. a) Define Mix Design of concrete and its importance in concrete. **6**  
b) Explain about the factors affecting choice of mix design. **10**

**OR**

10. Design a concrete mix of M30 grade. Take a standard deviation of 5 MPa. **16**

Specific Gravity of cement = 3.12

$$CA = 2.75$$

$$FA = 2.60$$

Water absorption of CA = 0.85% & FA = 1.10%.

Assume any data as per requirement.

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