

**B.E., DEGREE EXAMINATIONS: APRIL/MAY 2014**

(Regulation 2009)

Seventh Semester

**CIVIL ENGINEERING**

CEE123: Concrete Technology

*(Assume suitable data if not mentioned)*

**Time: Three Hours**

**Maximum Marks: 100**

**Answer ALL Questions:-**

**PART A (10x1=10 Marks)**

1. M20 grade of concrete approximates
  - a) 1: 3: 5 Mix
  - b) 1:1:2 Mix
  - c) 1:2:4 Mix
  - d) 1:1.5:3 Mix
2. Yield strength of steel for HYSD reinforcement is
  - a) 250 N/Sq.mm
  - b) 415 N/Sq.mm
  - c) 450 N/Sq.mm
  - d) 500 N/Sq.mm
3. For finding compressive strength of concrete, the minimum number of cubes required is
  - a). 3
  - b). 6
  - c). 9
  - d). 12
4. Which type of vibrator is greatly used in concrete work?
  - a). Surface Vibrator
  - b). Screen Vibrator
  - c). Needle Vibrator
  - d). Table Vibrator
5. The diameter of needle used in Vicat's apparatus for the determination of initial setting time is prescribed as
  - a). 0.5mm
  - b). 1mm
  - c). 2mm.
  - d) 5mm
6. Soundness test of cement by Le-Chatelier's apparatus gives unsoundness due to
  - a). Free lime only
  - b). Magnesia only
  - c). Both free lime and magnesia
  - d). All the above

7. In a day  $100\text{m}^3$  of concrete is being placed. How many cubes should be taken for testing of concrete
  - a. 3
  - b. 6
  - c. 30
  - d. 15
8. According to IS 456-2000 minimum period stipulated for moist curing of concrete using ordinary Portland cement is
  - a. 24 hours
  - b. 7 days
  - c. 14 days
  - d. 28 days
9. Characteristic compressive strength of concrete for M25 grade of concrete is
  - a. 20 N/Sq.mm
  - b. 25 N/Sq.mm
  - c. 30 N/Sq.mm
  - d. 9 N/Sq.mm
10. The value of Vee-Bee time for low workability as per Indian Standard is prescribed as
  - a). 1-5 Seconds
  - b). 5-10 Seconds
  - c). 10-20 Seconds
  - d). 20-40 Seconds

**PART B (10x 2 = 20 Marks)**

11. What is the composition of cement?
12. What do you mean by bulking of fine aggregates?
13. Mention the various methods of transportations of concrete
14. Define the term: Workability of concrete
15. How water-cement ratio affects the strength of concrete
16. Distinguish between nominal mix and design mix
17. Define the term: Characteristic strength of concrete
18. What is light weight concrete?
19. What is mean by ready mixed concrete?
20. Where the high performance concrete is used

**PART C (5 x 14 = 70 Marks)**

21. a) What are the reactions of hydration of the main compound in Portland cement

(OR)

- b) What are the various tests to be done on coarse aggregate and fine aggregate? Describe the sieve analysis procedure for aggregates.

22. a) Design a concrete mix of M25 using ACI method for the following data:

Standard deviation	= $4N/mm^2$
Specific gravity of CA	= 2.63
Specific gravity of FA	= 2.64
Fineness modulus of FA	= 2.80
Slump required	= 25mm
Maximum size of CA	= 40mm
Dry rodded density of CA	= 1600 kg/m <sup>3</sup>

Assume any other data required suitably. Find out the materials required per cubic meter of concrete.

(OR)

- b) (i) Why air entraining agents are used in concrete? Give any two air entraining agents used in concrete. (7)
- (ii) What are accelerators? Explain the uses of such accelerators in concrete. (7)

23. a) (i) What are the acceptance criteria for concrete of quality control as per IS 456-2000? (7)

(ii) How statistical control is used in the quality of control of concrete? (7)

(OR)

- b) (i) How would you do sampling work in massive concreting work? (7)
- (ii) Explain rejection criteria of concrete as per IS specifications. (7)

24. a) Explain the factors influencing shrinkage of concrete.

(OR)

- b) Explain about chemical attack on concrete and quality of water used in concrete

25. a) List the various types of special concrete indicating their uses for different applications

(OR)

b) Write short notes on

- i) Light weight concrete (5)
- ii) Ferro cement (5)
- iii) Geopolymer concrete (4)

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