

**B.E DEGREE EXAMINATIONS:NOV/DEC 2014**

(Regulation 2009)

Seventh Semester

**CIVIL ENGINEERING**

CEE123: Concrete Technology

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. An aggregate is said to be flaky if its least dimension is less than
  - a) 2/5th of mean dimension
  - b) 1/5th of mean dimension
  - c) 3/5th of mean dimension
  - d) 4/5th of mean dimension
2. Water cement ratio is the ratio of
  - a) Water to cement by weight
  - b) Water to cement by volume
  - c) Cement to water by weight
  - d) Cement to water by volume
3. Separation of coarse aggregates from mortar during transportation, is known
  - a) bleeding
  - b) creeping
  - c) segregation
  - d) shrinkage
4. ACI stands for
  - a) American concrete Institute
  - b) African Concrete Institute
  - c) American civil industry
  - d) All Concrete Institute
5. The entrained air in concrete
  - a) Increases the strength
  - b) Decreases the resistance to weathering
  - c) Increases the workability
  - d) Decreases the workability
6. Concrete is
  - a) Weak in tension
  - b) Strong in tension
  - c) Strong in both tension and compression
  - d) Weak in compression
7. In order to avoid segregation, fresh concrete should be dropped from a height of
  - a) Less than one meter
  - b) Less than two metres
  - c) More than one metre
  - d) More than two metres

8. The process of hardening of concrete in the presence of water is called
- a) Creep
  - b) Hydration
  - c) Shrinkage
  - d) Curing
9. Density of concrete varies from
- a) 2200 to 2600 kg/m<sup>3</sup>
  - b) 2800 to 3000 kg/m<sup>3</sup>
  - c) 3000 to 3200 kg/m<sup>3</sup>
  - d) 3200 to 3400 kg/m<sup>3</sup>
10. Concrete gains strength due to
- a) Chemical reaction of cement with sand and coarse aggregates
  - b) Evaporation of water from concrete
  - c) Hydration of cement
  - d) Curing

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

- 11. What is meant by hydration of cement?
- 12. What are the Physical Quality requirements Of aggregates?
- 13. Define chemical admixtures.
- 14. The Process of mix proportioning for concrete cannot be computerised. Why?
- 15. List out the requirements of fresh concrete.
- 16. What are the Factors affecting Strength of Hardened concrete?
- 17. Define Concrete Durability.
- 18. What is sulphate attack?
- 19. Name some of the artificial light weight aggregate.
- 20. Mention the applications of sulphur infiltrated concrete.

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

21. a) Describe the process of manufacture of cement by wet process.

**(OR)**

- b) Briefly explain about the gradation of coarse aggregates
22. a) Design a concrete mix for construction of an elevated water tank. The specified design strength of concrete (characteristic strength) is 30 MPa at 28 days measured on standard cylinders. Standard deviation can be taken as 4 MPa. The specific gravity of FA and C.A. are 2.65 and 2.7 respectively. The dry rodded bulk density of C.A. is 1600 kg/m<sup>3</sup>, and fineness modulus of FA is 2.80.

Ordinary Portland cement (Type I) will be used. A slump of 50 mm is necessary. C.A. is found to be absorptive to the extent of 1% and free surface moisture in sand is found to be 2 per cent. Assume any other essential data.

**(OR)**

b) Explain briefly how are mineral admixtures classified?

23. a) Explain in detail of any 2 tests for Fresh Concrete.

**(OR)**

b) Explain briefly the method used to determine the tensile strength of hardened concrete?

24. a) What precautions can be taken to ensure good quality concrete in coastal structures?

**(OR)**

b) Why is permeability of concrete of importance with respect to durability?

25. a) (i) Explain the properties of polymer Impregnated Concrete. (10)  
(ii) Discuss the use No fines concrete. (4)

**(OR)**

b) Define Guniting. Explain in detail about the applications of ferrocement?

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