



**B.E DEGREE EXAMINATIONS: JUNE 2015**

(Regulation 2013)

Third Semester

**CIVIL ENGINEERING**

U13CET305: Concrete Technology

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

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

1. The compressive strength of OPC after three days is expected to be more than
  - a) 16MPa
  - b) 22MPa
  - c) 27MPa
  - d) 33MPa
2. .... is the increase in volume of sand due to moisture which keeps sand particles apart.
3. Addition of air entraining agents to concrete increases all of the following except
  - a) Workability
  - b) Strength of concrete
  - c) Durability
  - d) Impermeability
4. .... offers improvement not economically attained by adjusting mix proportion.
5. A concrete having a slump of 70mm is termed as
  - a) Dry
  - b) Semi plastic
  - c) Plastic
  - d) Flowing
6. A concrete may attain its hundred percent compressive strength after .....days
7. The corrosion of reinforcement can be prevented by the following except
  - a) the use of corrosion inhibitors
  - b) Coating of steel or concrete
  - c) Use of stainless steel
  - d) Impregnating the pores of concrete by suitable polymer
8. The concrete in contact with alkaline soil or alkaline water should have a ----- .
9. The extent and propagation of cracks in concrete can be controlled by
  - a) providing reinforcements bars
  - b) incorporating fibres in the concrete
  - c) polymer impregnation
  - d) incorporating air in its composition
10. .... concrete is produced by addition of aluminium powder

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

**(Not more than 40 words)**

11. What are the major Bogue's compounds of cement?
12. What is grading of aggregates and its significance?
13. What are admixtures and additives?
14. What are supplementary cementitious materials (SCM)?
15. Define workability of concrete. How is it measured in the laboratory?
16. List the factors influencing the compressive strength of concrete.
17. What are the causes of lack of durability of concrete?
18. State the principal forms of destruction of concrete due to corrosion.
19. What is vacuum concrete and what properties does it improve?
20. What are the advantages of fibre reinforced concrete?

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

**(Not more than 400 words)**

**Q.No. 21 is Compulsory**

21. Write an essay on properties and applications of any four types of special concretes.
  
22. a) (i) What are initial and final setting times of cement? Describe the test for determining the setting time of cement. (7)  
(ii) Discuss briefly the tests prescribed for determination of strength of aggregate. (7)  

**(OR)**

b) (i) Explain the effect of size, shape, texture and grading of aggregate in concrete. (7)  
(ii) Explain the essential characteristics of water that can be used for mixing and curing. (7)
  
23. a) (i) Enlist the different admixtures used in concrete construction. (7)  
(ii) Discuss about the functions and properties of any two types of admixtures. (7)  

**(OR)**

b) (i) Explain the actions and applications of water reducing admixture.  
(ii) Describe the role of flyash and silica fume.
  
24. a) (i) Explain the compaction factor test for determining the workability of concrete. (7)  
Compare it with slump test.

- (ii) State the destructive tests performed on hardened concrete and describe the split tension test on concrete cylinder. (7)

**(OR)**

- b) (i) Explain briefly the properties of fresh and hardened concrete. (7)  
(ii) What are the strength requirements which a concrete should satisfy with regard to acceptance criteria as stipulated by IS456-2000? (7)

25. a) (i) Discuss about the chemical attack on concrete. What steps may be taken to ensure durable concrete against chemical attack. (7)  
(ii) Discuss the factors governing the impermeability of concrete. (7)

**(OR)**

- b) (i) What are various causes for corrosion of steel in concrete? Explain them briefly. (7)  
(ii) What are the advantages of using ready mixed concrete instead of site mixed concrete? (7)

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