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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Fourth Semester, B.E. - Civil Engineering

Make - up Examination; July - 2016

Concrete Technology

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.

ii) Missing data may suitably be assumed.

iii) Use of thermodynamic data hand book is permitted.

UNIT - I

1. a. What are Bogue's Compounds? With the help of a graph explain their role in the strength development and heat of hydration. 10
- b. Explain the manufacturing of ordinary Portland cement with flow chart. 10
2. a. What is the difference between false set, initial set and final set? Give the BIS requirement of OPC for, 10
 - (i) Setting frame
 - (ii) Fineness of Cement.
- b. Explain the classification of aggregate based on size, shape and texture. What is the importance of grading of aggregates? 10

UNIT - II

3. a. Mention the different test conducted to access workability and discusses the significance of each test. 10
- b. Explain the methods adopted for mixing concrete. 10
4. a. Write a note on curing methods. 10
- b. Explain segregation and bleeding of fresh concrete. Discuss the factors affecting them. What are the control measures? 10

UNIT - III

5. a. What is Abram's w/c ratio law? Explain with a neat sketch, how the increase in w/c ratio effects the compressive strength of concrete. 10
- b. Explain different types of Shrinkages in Concrete. 10
6. a. Discuss in detail the factors affecting modulus of elasticity and also the relation between modulus of elasticity and strength. 10
- b. What are the factors affecting creep? Discuss in detail. 10

UNIT - IV

7. a. Write a note on concept of mix design and variables in proportioning. 10
- b. Explain the factors affecting mix design. 10

8. Design the concrete mix by IS code method (10262 - 2009) of M₄₀ grade concrete. Given specific gravity of Cement coarse aggregate and fine aggregate are 3.15, 2.74 and 2.74 respectively and water absorption of Coarse aggregate is 0.5% and fine aggregate is 1.0% 20

UNIT - V

- 9 a. Explain the term Carbonation of Concrete. Discuss the factors related to rate of Carbonation. 10
- b. Write a note on Chloride attack. 10
- 10 a. Describe the Cracks in concrete which affect durability of Concrete. 10
- b. Write a note on joints in Concrete. 10

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