



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

(An Autonomous Institution affiliated to VTU, Belagavi)

### Fourth Semester, B.E. - Civil Engineering Semester End Examination; May/June - 2018 Concrete Technology

Time: 3 hrs

Max. Marks: 100

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

ii) Use of IS 456-2000 and IS 10262-2009 is permitted.

iii) Any missing data in mix design may be suitably assumed.

#### UNIT - I

- |      |  |    |
|------|--|----|
| 1 a. | Name any four types of cement and elaborate them.  | 8  |
|      | b. List the Bogue's compounds and explain them in detail.  | 12 |
| 2 a. | Explain how to get the necessary data for plotting the particle size distribution curve for fine aggregate?  | 10 |
|      | b. With the help of a table, show the tolerable concentrations of impurities in water used for concrete mix. | 10 |

#### UNIT - II

- |      |  |    |
|------|--|----|
| 3 a. | Discuss how the workability of concrete to be placed for footing varies from the workability of concrete to be placed at column-beam junction. | 10 |
|      | b. List out the factors causing segregation and bleeding in concrete.  | 10 |
| 4 a. | Name any five concrete compaction techniques and elaborate them.   | 10 |
|      | b. With the help of neat graph, explain how to find out the optimum dosage at plasticizer?   | 10 |

#### UNIT - III

- |      |   |    |
|------|---|----|
| 5 a. | Mention and explain any five factors affecting strength of hardened concrete.                       | 10 |
|      | b. What do you mean by Bond's strength? Explain in detail the two different types of Bond strength. | 10 |
| 6 a. | Mention and explain the different methods of capping the specimens used for compression test.       | 10 |
|      | b. List out the factors affecting shrinkage and creep.  | 10 |

#### UNIT - IV

7. Design a concrete mix of M25 grade with the help of following data :

- |   |   |
|---|---|
| I) Maximum size of aggregate - 20 mm (angular)          | II) Degree of workability - 75 mm slump |
| III) Degree of quality control - good                   | IV) Type of exposure - Moderate         |
| V) Type of concrete - RCC                               | 20                                      |
| VI) Specific gravity of;                                |   |
| a) Cement - 3.16  | b) Fine aggregate - 2.63                |
|   | c) Coarse aggregate - 2.71              |
| VII) Zoning of fine aggregate - Zone-II                 |   |
| VIII) Aggregates are in saturated surface dry condition |   |

- 8 a. Explain the variables in proportioning with respect to concrete mix design. 10
- b. List out any ten factors contributing to cracks in concrete. 10

**UNIT - V**

- 9. Write short notes on :
  - a) High strength concrete
  - b) Self compacting concrete 20
  - c) Polymer impregnated concrete
  - d) Roller compacted concrete
- 10. Write short notes on:
  - a) High performance concrete
  - b) Porous concrete 20
  - c) Bacterial concrete
  - d) Translucent concrete

\* \* \* \*