



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

(An Autonomous Institution affiliated to VTU, Belagavi)

**Third Semester, B.E. - Civil Engineering**

**Semester End Examination; March / April - 2022**

**Concrete Technology**

Time: 3 hrs

Max. Marks: 100

### Course Outcomes

The Students will be able to:

CO1: Apply the knowledge of science and engineering to acquire the fundamentals of cement, aggregates and admixtures.

CO2: Conduct investigations to select suitable materials for concrete.

CO3: Design special concrete as per selected codes.

CO4: Apply the concept of durability of concrete for sustainability.

**Note:** I) **PART - A** is compulsory. **Two** marks for each question.

II) **PART - B:** Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.

| Q. No.               | Questions  | Marks     |
|----------------------|--|-----------|
| <b>I : PART - A</b>  |  | <b>10</b> |
| I a.                 | Define hydration of cement.  | 2         |
| b.                   | Define segregation and bleeding.   | 2         |
| c.                   | Define gel space ratio.  | 2         |
| d.                   | Define fibre reinforced concrete   | 2         |
| e.                   | Define permeability.   | 2         |
| <b>II : PART - B</b> |  | <b>90</b> |
| <b>UNIT - I</b>      |  | <b>18</b> |
| 1 a.                 | i) Describe the setting time of cement.                                      | 9         |
|                      | ii) Enumerate the structure of hydrated cement paste.                        | 9         |
| b.                   | Describe the various tests on cement.  | 9         |
| c.                   | Describe; i) Specific gravity of coarse aggregate                            | 9         |
|                      | ii) Soundness test of cement   |           |
| <b>UNIT - II</b>     |  | <b>18</b> |
| 2 a.                 | Discuss the factors affecting workability.                                   | 9         |
| b.                   | Enumerate compaction and list the methods of compaction.                     | 9         |
| c.                   | What is an admixture? Explain plasticizers and fly ash.                      | 9         |
| <b>UNIT - III</b>    |  | <b>18</b> |
| 3 a.                 | List and enumerate the factors affecting strength of concrete.               | 9         |
| b.                   | List and explain briefly the methods of Non-Destructive testing of concrete. | 9         |
| c.                   | Define creep. List and explain the factors affecting the creep.              | 9         |

**UNIT - IV****18**

- 4 a. Explain the factors contributing to cracks in cement. 9
- b. Enumerate durability of concrete and mention the significance of durability. 9
- c. Explain the methods of controlling sulphate attack. 9

**UNIT - V****18**

- 5 a. Enumerate, how light weight can be achieved in concrete with material properties? 9
- b. Describe the factors affecting properties of fibre reinforced concrete. 9
- c. Explain the application of polymer impregnated concrete. 9

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