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Fourth Semester B.E. Degree Examination, July/August 2022 Concrete Technology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. With a neat flow chart, explain the process of manufacturing of cement by wet process. (10 Marks)
- b. Define Flakiness and Elongation. Explain in brief the laboratory test for determination of Flakiness and Elongation index of aggregate. (10 Marks)

OR

- 2 a. What are plasticizers? Explain the basic constituents and the mechanisms of plasticizers. (10 Marks)
- b. List the different types of cement and explain in brief any two types along with the recommendations. (10 Marks)

Module-2

- 3 a. Define workability. List and explain the factors affecting workability of concrete. (10 Marks)
- b. With neat sketch, explain the flow test of concrete to determine its quality for consistency. (10 Marks)

OR

- 4 a. Explain in brief the various methods of curing done on fresh concrete. (10 Marks)
- b. What are the various stages of manufacturing of concrete? Explain them in detail. (10 Marks)

Module-3

- 5 a. What are the factors influencing the strength development of concrete? (10 Marks)
- b. With principle application and limitations, explain the ultrasonic pulse velocity in situation of concrete. (10 Marks)

OR

- 6 a. What are the factors affecting the shrinkage of concrete? Briefly explain. (10 Marks)
- b. With reference to IS-456, explain the principle, applications and limitations of penetration and pull out test on concrete. (10 Marks)

Module-4

- 7 Briefly explain the step by step procedure for designing of concrete mix referring to IS-10262. (20 Marks)

OR

8 Design M₁₅ grade of concrete using OPC-43 grade cement with the following details:

- i) Mineral admixture – Fly ash referring IS 3812
- ii) Maximum nominal size of aggregate – 150mm
- iii) Exposure condition – moderate
- iv) Workability – 50mm (slump)
- v) Degree of supervision – good
- vi) Type of aggregate – rounded
- vii) Maximum cement content – 450kg/m³
- viii) Specific gravity.
 - Cement – 3.15
 - Fine aggregate – 2.74
 - Course aggregate – 2.74
- ix) Water absorption
 - Course aggregate – Nil
 - Fine aggregate – Nil conforming zone II of table 9 IS – 383.

(20 Marks)

Module-5

- 9 a. Explain the various factors affecting the properties of fibre reinforced concrete. (10 Marks)
- b. What do we mean by self compacting concrete? Explain the properties and application in brief. (10 Marks)

OR

10 Write a brief note on the following:

- i) Manufacturing process of RMC
- ii) Advantages and disadvantages of RMC
- iii) Light weight concrete and its types
- iv) Types of fiber reinforced concrete.

(20 Marks)
