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Fourth Semester B.E. Degree Examination, Dec. 2019/Jan. 2020
Concrete Technology

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
 1 Lc — 10262 mix design code is allowed.

Module-1

- 1 a. Explain the manufacturing process of cement by wet process using flow chart. (10 Marks)
- b. Name chemical and mineral admixtures and explain flyash and Metakaolin admixtures in detail. (10 Marks)

OR

- 2 a. Define Hydrating Cement. With schematic representation, explain structure of hydrated cement paste. (08 Marks)
- b. Name the alternatives of River sand and explain the properties of M — Sand. (06 Marks)
- c. Explain the importance of Aggregate in concrete. (06 Marks)

Module-2

- 3 a. Explain two laboratory tests for measurement of workability. (10 Marks)
- b. Explain the manufacturing process of concrete. (10 Marks)

OR

- 4 a. Explain the methods of curing. (10 Marks)
- b. Describe the effect of heat of hydration during mass concreting at project sites. (05 Marks)
- c. Explain Segregation and Bleeding. (05 Marks)

Module-3

- 5 a. Explain the factors influence the strength of Hardened concrete. (06 Marks)
- b. What are the factors which affects the creep? (04 Marks)
- c. Explain the types of Shrinkage in concrete. (10 Marks)

OR

- 6 a. What are the Internal and External factors influence the durability of concrete? (12 Marks)
- b. Briefly explain the Rebound hammer test and Ultrasonic pulse velocity test. (08 Marks)

Module-4

- 7 a. Explain the concept of mix design. (06 Marks)
- b. List out the data required for mix proportioning. (04 Marks)
- c. Write the steps involved in..the methods of mix design. (10 Marks)

OR

17CV/C

- 8 Design a concrete mix for M₃₅ grade using fly ash. Other data are given below :
- a. Type of cement OPC 43 grade
 - b. Type of flyash F type
 - c. Maximum size of aggregate 20 mm
 - d. Minimum cement content 320kg/m³
 - e. Maximum water cement ratio 0.45
 - f. Workability 100 mm slump
 - g. Exposure condition Severe (RCC)
 - h. Method of placing concrete Pumping
 - i. Degree of supervision good
 - j. Chemical admixture Super plasticizer
 - k. Specific gravity of cement 3.15
 - l. Specific gravity of fly ash 2.2
 - m. Specific gravity of coarse aggregate 2.78
 - n. Specific gravity of fine aggregate 2.70
 - o. Water absorption :
 - i) Coarse aggregate 0.5%
 - ii) Fine aggregate Nil
 - p. Free surface moisture
 - i) Coarse aggregate Nil
 - ii) Fine aggregate 1.5%
 - q. Grading of coarse aggregate is confirming to table 2 of IS 383 and grading of fine aggregate is falling Zone 1. (20 Marks)

Module-5

- 9 a. Explain the production of Ready Mixed concrete. (12 Marks)
- b. What is Self Compacting Concrete? Explain the materials required for self compacting concrete used. (08 Marks)

OR

- 10 a. Explain the types of fibres used in Fiber Reinforced Concrete and its application. (10 Marks)
- b. Explain properties of light weight concrete. (04 Marks).
- c. List out advantages of Light weight concrete. (06 Marks)