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10CV42

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Concrete Technology

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.
2. Use of IS-10262-2009 is permitted.

PART – A

- 1 a. Name Bogues' compound in cement. Explain the manufacture of OPC cement by dry process with the help of flow chart only. (10 Marks)
- b. What are the tests usually conducted on cement in the laboratory. Explain any two tests. (10 Marks)
- 2 a. Explain the importance of size, shape and texture of coarse aggregates on the quality of concrete. (10 Marks)
- b. Explain bulking of sand and its importance. (10 Marks)
- 3 a. What are the tests commonly employed to measure workability? Explain any two tests to measure workability. (10 Marks)
- b. List and explain the factors that affect the workability of concrete. (10 Marks)
- 4 a. What are chemical admixtures? Explain plastisizers, accelerators and retarders. (10 Marks)
- b. Explain the following:
 (i) Fly ash (ii) Silica fume (iii) Rice husk ash (iv) GGBS. (10 Marks)

PART – B

- 5 a. Explain factors affecting strength of concrete. (10 Marks)
- b. Explain flexural strength and split tensile strength tests on concrete. (10 Marks)
- 6 a. Explain the factors affecting the modulus of elasticity of concrete. (05 Marks)
- b. Explain the relation between modulus of elasticity and compressive strength. (05 Marks)
- c. Explain creep and shrinkage of concrete. (10 Marks)
- 7 a. Define durability of concrete and explain its significance. (05 Marks)
- b. Explain the effects of freezing and thawing on the durability of concrete. (05 Marks)
- c. What is sulphate attack on concrete? Explain methods of controlling it. (10 Marks)
- 8 Design a concrete mix of M₃₅ grade as per IS10262-2009, with the following stipulations:
 i) Grade designation – M₃₅.
 ii) Type of cement – OPC43 grade conforming to IS12269-1987.
 iii) Maximum nominal size of aggregate – 20 mm.
 iv) Minimum cement content – 290 kg/m³
 v) Maximum W/C ratio – 0.55
 vi) Workability – 125 mm (slump)
 vii) Exposure condition – moderate (for RCC)
 viii) Method of concrete placing – pumping.
 ix) Degree of supervision – Good.
 x) Type of aggregate – sub angular aggregate.
 xi) Maximum cement content – 450 kg/m³
 xii) Chemical admixture type – super plastisizers.
 (Capable of reducing water content upto 25% maximum). (20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.