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10CV81

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018

Advanced Concrete Technology

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Enumerate the importance of Bogue's compounds. (06 Marks)
- b. Calculate the Gel/space ratio from the following data:
 - i) Weight of cement = 600 gm
 - ii) Percentage of hydration = 90%
 - iii) Water cement ratio = 0.5 (06 Marks)
- c. What are the factors affecting the strength and elasticity of concrete? (08 Marks)
- 2 a. Explain the mechanism of deflocculation of cement particles by using plasticizers with neat sketches. (06 Marks)
- b. How do you determine the optimum dosage of super-plasticizer using Marsh Cone? (06 Marks)
- c. What are mineral admixtures? Explain: (i) GGBS, (ii) Fly Ash. (08 Marks)
- 3 a. Explain the factors affecting the mix design of concrete. (06 Marks)
- b. Design a concrete mix for M30 from the following data:

Type of cement = OPC 53 grade
 Maximum size of aggregate = 20 mm
 Minimum cement content = 310 kg/m³
 Maximum W/C ratio = 0.45
 Workability = 50-75 mm slump
 Exposure condition = normal
 Degree of supervision = good
 Water absorption = 0.5% (CA)
 Free surface moisture = Nil (CA)
 Specific gravity of cement = 3.15
 Specific gravity of CA = 2.80
 Specific gravity of FA = 2.60
 Specific gravity of super plasticizer = 1.2
 Missing data may be suitably assumed. (14 Marks)
- 4 a. Explain Alkali-Aggregate reaction. (06 Marks)
- b. List the methods of controlling sulphate attack. (06 Marks)
- c. Define durability. Explain the factors affecting durability. (08 Marks)

PART – B

- 5 a. Explain briefly advantages of RMC. (06 Marks)
- b. What are the advantages of SCC? (06 Marks)
- c. List the factors affecting the workability. Explain any one workability test conducted on S.C.C. (08 Marks)

- 6 a. What is Ferrocement? What are the various applications of Ferrocement? (06 Marks)
b. What are the different types of fibers used in concrete? (06 Marks)
c. What is aspect ratio? How does it influence workability and strength of FRC? (08 Marks)
- 7 a. Explain high density concrete. (06 Marks)
b. What is high performance concrete? (06 Marks)
c. Explain: (08 Marks)
i) Pumice
ii) Volcanic cinders.
- 8 a. What are the factors which affect the compressive strength of concrete? (08 Marks)
b. Explain any two tests on Hardened concrete. (12 Marks)

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