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10CV81

Eighth Semester B.E. Degree Examination, June/July 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. Missing data may be suitably assumed.
3. Use of IS:10262-2009 and IS456-2000 are permitted.

PART – A

- 1 a. Enumerate the importance of Bogue's compounds in ordinary portland cement. (07 Marks)
b. Explain the rheology of concrete in terms of Bingham's parameter. (07 Marks)
c. Determine capillary porosity, total porosity and gel space ratio for a cement paste with W/C ratio 0.5 and degree of hydrogen 90% (06 Marks)
- 2 a. Explain the mechanism of 'deflocculation' of cement particles by super plasticizers with neat sketches. (10 Marks)
b. Explain the Marsh cone test for optimum dosage of superplasticizer. (05 Marks)
c. Explain the effect of Flyash on hardened concrete. (05 Marks)
- 3 a. Explain the factors affecting the mix design of concrete. (06 Marks)
b. Design a concrete mix of M₂₀ grade for the following data [M₂₀ grade].
Maximum size of aggregate = 20 mm
Workability = 100 mm [Slurry]
Degree of quality control = good
Type of exposure = mild
Specific gravity of cement = 3.15.
Specific gravity of coarse aggregate = 2.65
Specific gravity of fine aggregate = 2.60
Water absorption of coarse aggregate = 0.5%
Water absorption of fine aggregate = 1.0%
Free surface moisture coarse aggregate = Nil
Free surface moisture fine aggregate = 2.0%
Coarse aggregate percentage of different fractions 60% : 40%
Fine aggregate belongs to Zone II. (14 Marks)
- 4 a. Explain the influence of W/C ratio and age on permeability of concrete. (07 Marks)
b. Discuss in brief alkali aggregate reaction. What precautions are necessary to minimize? (07 Marks)
c. What is sulphate attack? Explain briefly the methods of controlling sulphate attack. (06 Marks)

PART – B

- 5 a. What is RMC? Explain briefly advantages of RMC. (06 Marks)
b. Explain shot crete and under water concreting. (06 Marks)
c. What are the advantages of self compacting concrete? What are different test methods for determining the rheology of self compacting concrete? (08 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.

- 6 a. What are the different types of fibres used in concrete? (06 Marks)
b. What are the factors effecting properties of fibre reinforced concrete. (08 Marks)
c. What is ferro-cement? List the various applications of Ferro cement. (06 Marks)
- 7 a. Write short notes on :
(i) Light weight concrete (06 Marks)
(ii) High density concrete (06 Marks)
b. What is 'High performance concrete [HPC]'? What are the applications of high performance concrete? (06 Marks)
c. Discuss in brief the properties of High performance concrete in fresh and hardened state. (08 Marks)
- 8 Explain the following : (08 Marks)
a. Tests on hardened concrete (06 Marks)
b. Rebound Hammer Test (NDT) (06 Marks)
c. Pulse Velocity Test (NDT) (06 Marks)
