Pile

USN | | | | | | | | | | |

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 atleast TWO questions from each part.***
2. Missing daya 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 M_{20} grade for the following data [M_{20} 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)**

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
(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 :
a. Tests on hardened concrete **(08 Marks)**
b. Rebound Hammer Test (NDT) **(06 Marks)**
c. Pulse Velocity Test (NDT) **(06 Marks)**

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