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10CV42

Fourth Semester B.E. Degree Examination, June/July 2015
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. What are the various laboratory tests conducted on cement? (05 Marks)
b. Explain the importance of conducting the soundness test on cement and the procedure of conducting the soundness test. (10 Marks)
c. Explain with the flow chart the manufacture of cement by wet process. (05 Marks)
- 2 a. Explain the importance of shape and texture of aggregate used in concrete. (10 Marks)
b. Which are various tests conducted on coarse aggregates for determining its strength? (05 Marks)
c. Explain bulking of aggregates. (05 Marks)
- 3 a. What is an admixture? What is the effect of air entrainment on the properties of concrete? (12 Marks)
b. Write short notes on accelerators and retarders. (08 Marks)
- 4 a. Define workability and list the factors affecting workability. (08 Marks)
b. List the various tests to measure workability and explain KEE BEE consistometer test. (12 Marks)

PART – B

- 5 a. What are factors affecting the strength of concrete? (04 Marks)
b. Explain the accelerated curing test on concrete cubes. (08 Marks)
c. Write short notes on Bond strength of concrete. (08 Marks)
- 6 a. Explain briefly the factors affecting modulus of elasticity of concrete. (10 Marks)
b. Discuss the factors affecting creep. (10 Marks)
- 7 a. Explain the different methods of controlling sulphate attack on concrete. (10 Marks)
b. Discuss the durability of concrete in sea water. (10 Marks)
- 8 Design a concrete mix by IS method for M30 grade concrete as per IS 10262 – 2009.
 - a) Grade : M30
 - b) Cement : OPC – 43 Grade
 - c) Maximum Nominal size of aggregate : 20mm
 - d) Minimum cement content : 320 Kg/m³
 - e) Max. w/c Ratio : 0.45
 - f) Workability : 100mm slump
 - g) Exposure condition : severe (Reinforced concrete)
 - h) Method of concrete placing : pumping
 - i) Degree of super vision : Good
 - j) Type of aggregate : Crushed Angular
 - k) Max. Cement content : 450 Kg/m³
 - l) Chemical admixture : Super plasticizer.

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



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Test Data for materials:

- i) Specific Gravity of cement : 3.15
- ii) Specific Gravity of C.A : 2.74
- iii) Specific Gravity of F.A : 2.74
- iv) Water Absorption for
 - 1) C.A : 0.5%
 - 2) F.A : 1.0%
- v) Free surface moisture
 - 1) C.A : NIL (Absorbed moisture also NIL)
 - 2) F.A : NIL
- vi) Fine Aggregate conforms to grading zone – I
 - 1) of table 4 of IS 383
 - 2) Coarse Aggregate

IS sieve size (mm)	Analysis of coarse Aggregate fraction		% of different Fractions			Remarks
	I	II	I 60%	II 40%	Combined 100%	
20	100	100	60	40	100	Conforming To Table 2 of IS 383
10	0	71.20	0	28.5	28.5	
4.75		9.40		3.7	3.7	
2.36		0				

(20 Marks)
