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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, 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.

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)
