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Question Paper Code: 39011

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Elective

Civil Engineering

01UCE908 - CONCRETE TECHNOLOGY

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. How can you distinguish alite and belite in a microscopic image?
2. What is Gap Graded Aggregate?
3. Define accelerators.
4. Distinguish between Plasticizers and Superplasticizers.
5. What is the difference between Design mix and Nominal mix?
6. What are the factors affecting choice of concrete mix design?
7. How does water cement ratio affect the strength of concrete?
8. Differentiate between bleeding and segregation in concrete.
9. Define classification of light weight concrete.
10. What could be benefits of using high strength concrete from the owner's point of view?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain various tests to be done on coarse and fine aggregates. (16)

Or

- (b) Enlist the different types of cement. Discuss about the properties and applications for any two types of cement in concrete construction. (16)

12. (a) Describe with example how accelerating admixture differs from retarding admixture. (16)

Or

- (b) Explain the mechanism of action and advantages of following chemical admixtures in concrete: (i) Retarders (ii) Accelerators (iii) Water proofers. (16)

13. (a) Compare the salient features of the BIS, ACI and DOE methods of concrete mix-design. (16)

Or

- (b) Design M25 concrete based on the provisions of ACI 211.1-91 for the following data:

Design stipulations for proportioning	Test data for materials
Grade designation : M25	Specific gravity of cement : 3.15
Type of cement : OPC 43 grade	Dry rodded density of coarse aggregate = 1600 kg/m ³
Standard deviation: 4 MPa	Fineness modulus of sand :2.80
Max. nominal size of aggregate : 20 mm	Specific gravity of
Maximum water cement ratio : 0.55	Coarse aggregate : 2.68
Workability : 80 mm (slump)	Fine aggregate : 2.55
Exposure condition : Mild	Total moisture content
Degree of supervision: Good	Coarse aggregate : 6 %
Type of aggregate. : Crushed angular	Fine aggregate :2 %
Maximum cement content: 450 kg/m ³ .	Water absorption
Chemical admixture : Not used	Coarse aggregate : 1%
	Fine aggregate : 0.5%

(16)

14. (a) Explain the lab tests to determine the tensile strength of concrete and write comments on the tensile strength value obtained from these tests. (16)

Or

- (b) Define workability of concrete, which are the different methods of measuring it in the laboratory? Explain any two of them. (16)

15. (a) What are the different methods of light weight concrete? Explain the applications and advantages of light weight concrete. (16)

Or

- (b) What is Geo polymer concrete? Discuss the parameter involved in the producing of Geo polymer concrete. (16)