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Question Paper Code: 39108

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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. Discuss the advantages of using Pozzolanic material in ordinary Portland cement.
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 the use and chemical composition of following cements: (i) Quick setting Cement (ii) Sulphate resisting Cement (iii) Low heat Cement (iv) Portland Pozzolana Cement. (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) (i) Describe with example how accelerating admixture differs from retarding admixture. (8)

(ii) State any four chemical admixtures used in concrete and situations where it is used. (8)

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: (16)

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

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

Or

(b) Discuss factors influence strength of hardened concrete. (16)

15. (a) (i) How is HPC produced? What are its uses? (8)
- (ii) What are the different methods of light weight concrete? Explain the applications and advantages of light weight concrete. (8)

Or

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

