Reg. No. : | | | | | | | | | | |

Question Paper Code: 39108

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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. What is the role of C_3S and C_3A on the properties of cement?
2. What is Gap Graded Aggregate?
3. Define accelerators.
4. How plasticizers are important for concrete?
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. What is Abram's law? Explain the factors affecting the compressive strength of concrete.
9. What could be benefits of using high strength concrete from the owner's point of view?
10. Define classification of light weight concrete.

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 a concrete mix by BIS method with the following data:

Characteristic compressive strength = 35 N/m^2
Maximum size of aggregate = 20 mm (angular)
Fine aggregates confirm to grading zone II
Degree of workability = 0.80
Degree of quality control good
Type of exposure mild
Specific gravity of cement-3.14
Specific gravity of fine aggregate-2.58
Water absorption
(i) Coarse aggregate-Nil
(ii) Fine aggregate-1.9%
Water cement ratio-0.48
Assume any other data if necessary. (16)

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

15. (a) What is high performance concrete? Describe the tests to be performed to check the acceptability of any one high Performance concrete. (16)

Or

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