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Question Paper Code: 39108

B.E. / B.Tech. DEGREE EXAMINATION, MAY 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. 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. 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. Define aspect ratio.

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 conform 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) 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) Discuss factors influence strength of hardened concrete. (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)