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Question Paper Code: 31911

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

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 do you mean by graded aggregate?
3. Define accelerators.
4. How plasticizers are important for concrete?
5. Differentiate between nominal mix and design mix concrete.
6. What are the recommendation given in IS 456-2000 to produce good quality of concrete?
7. How does water cement ratio affect the strength of concrete?
8. Write the relationship between compressive and tensile strength of harden concrete.
9. Under what condition you would recommend the use of polymer impregnated 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) (i) Enlist the different types of cement. Discuss about the properties and applications for any two types of cement in concrete construction. (8)
- (ii) Write briefly about the classification of aggregates according to size and shape. (8)

12. (a) Define Admixtures. Enlist the different types mineral admixtures used in concrete. Describe briefly the influence of three most important mineral admixtures on concrete. (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 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) 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)