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Question Paper Code: 49108

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

Elective

Civil Engineering

14UCE908 - CONCRETE TECHNOLOGY

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- The chemical compound responsible for ultimate strength of cement is
 - Di-calcium silicate
 - Tri calcium aluminate
 - Gypsum
 - Calcium chloride
- The bulk density of aggregates does not depend upon :
 - size and shape of aggregates
 - specific gravity of aggregates
 - grading of aggregates
 - size and shape of the container
- _____ is added in order to prevent flash setting of cement.
 - Calcium chloride
 - Gypsum
 - Di-calcium silicate
 - Tri calcium aluminate
- Super plasticizer does not participate in any chemical reaction with cement.
 - gypsum
 - calcium chloride
 - super plasticizer
 - none of these
- The maximum size of coarse aggregate to be used in RCC as per IS456:2000.
 - 20 mm
 - 25 mm
 - 30 mm
 - 35 mm

6. Nominal mix concrete may be used for concrete of grade _____ and lower.
(a) M10 (b) M15 (c) M20 (d) M25
7. Specified compressive strength of concrete is obtained from cube tests at the end of _____ days.
(a) 7 days (b) 14 days (c) 28 days (d) 56 days
8. Workability of concrete for a given water content is good if the aggregates are
(a) rounded (b) angular (c) square (d) flaki
9. What is the maximum density value of light weight concrete?
(a) 1850 kg/m³ (b) 1950 kg/m³
(c) 2000 kg/m³ (d) 2050 kg/m³
10. What is the size of wire used in ferro cement mesh?
(a) 0.5 to 1 mm dia (b) 1 to 2 mm dia
(c) 2 to 3 mm dia (d) 3 to 4 mm dia

PART - B (5 x 2 = 10 Marks)

11. What is grade of cement?
12. What are admixtures?
13. What is retarder?
14. Define Young's modulus.
15. Define ferro-cement.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the test procedure of crushing strength of coarse aggregate used in concrete. (8)

(ii) What do you mean by aggregate impact value? How it is determined in the laboratory. (8)

Or

(b) List the various types of cements as per Indian standard. Brief their uses. (16)

17. (a) What is super plasticizer? Explain the effect of super plasticizer in concrete. (16)

Or

- (b) Write a note on accelerator and air entraining agent. (16)
18. (a) Explain the procedure of IS method of mix design. (16)

Or

- (b) Design a concrete mix for construction of an elevated water tank. The specified design strength of concrete is 30 MPa at 28 days of standard cylinders. Standard deviation may be taken as 4 MPa. The sp.gr. of FA and CA are 2.65 and 2.7 respectively. The dry rodded bulk density of C.A is 1600 kg/m^3 , and fineness modulus of F.A is 2.8. Ordinary Portland Cement (Type I) will be used. A slump of 50 mm is necessary. C.A is found to be absorptive to the extent of 1% and free surface moisture in sand is found to be 2%. Assume any other data essential. (16)
19. (a) (i) Write down the procedure of flexural strength test on concrete beam. (8)
- (ii) Brief about compressive strength test on concrete cube. (8)

Or

- (b) (i) Define modulus of elasticity. How will you determine the modulus of elasticity of concrete? (8)
- (ii) How will you determine the workability of concrete using slump test? (8)
20. (a) What is Fibre reinforced concrete? Give its application. (8)
- (b) How light weight concrete is produced? Brief its properties and suitable applications. (8)

Or

- (b) Write a note on various types of polymer concrete. (16)
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