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Question Paper Code: 39108

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Elective

Civil Engineering

01UCE908 - CONCRETE TECHNOLOGY

(Regulation 2013)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

- Hydration of cement is due to chemical action of water with
 - Tricalcium silicate and dicalcium silicate
 - Dicalcium silicate and tricalcium aluminate
 - Tricalcium aluminate and tricalciumaluminoferrite
 - All the above
- 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
- An aggregate is said to be flaky if its least dimension is less than
 - 1/5th of mean dimension
 - 2/5th of mean dimension
 - 3/5th of mean dimension
 - 4/5th of mean dimension
- The increased cohesiveness of concrete, makes it
 - less liable to segregation
 - more liable to segregation
 - more liable to bleeding
 - more liable for surface scaling in frosty weather
- The maximum size of coarse aggregate to be used in RCC as per IS456:2000.
 - 20 mm
 - 25 mm
 - 30 mm
 - 35 mm

6. The high strength of rapid hardening cement at early stage, is due to its
- (a) finer grinding (b) burning at high temperature
(c) increased lime cement (d) higher content of tricalcium
7. Internal friction between the ingredients of concrete, is decreased by using
- (a) less water (b) fine aggregates
(c) rich mix (d) more water and coarse aggregates
8. For road pavements, the cement generally used, is
- (a) ordinary Portland cement (b) rapid hardening cement
(c) low heat cement (d) blast furnace slag cement
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 (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. 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. (8)
12. Define Admixtures. Enlist the different types mineral admixtures used in concrete. Describe briefly the influence of three most important mineral admixtures on concrete. (8)
13. Design a reinforced concrete mix M30 based on the provision of IS10262-2009 for the following data: (8)

Design stipulations for proportioning	Test data for materials
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Grade designation : M30	Specific gravity of cement : 3.15
Type of cement : OPC 43 grade	Fine aggregate :Zone II
Max. size of aggregate. : 20 mm	Specific gravity of
Workability : 75 mm (slump)	Coarse aggregate : 2.7
Exposure condition : Mild	Fine aggregate : 2.6
Degree of supervision: Good	Water absorption of
Type of aggregate. : Crushed angular	Coarse aggregate =0.7%
Maximum cement content : 450 kg/m ³ .	Fine aggregate = 0.5%
Chemical admixture : Not used	Total moisture content of
	Coarse aggregate = 3%
	Fine aggregate = 2%

14. What are the different tests conducted in the lab to determine the workability of concrete? Compare the merit and demerit of each test. (8)
15. Explain the following terms with respect to Fibre Reinforced Concrete:
(a) Volume fraction of fibres (b) Aspect ratio of fibres (c) Balling of fibres. (8)