A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59102

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

Elective

Civil Engineering

15UCE902 – CONCRETE TECHNOLOGY

(IS 10262 :2009 Permitted)

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which of the following compound has the maximum heat of hydration? CO1- U

   (a) C_3S (b) C_2S (c) C_3A (d) C_4AF

2. If the fineness modulus value of fine aggregate is 2.78, the type of sand is CO1- U

   (a) Dense sand (b) Fine Sand (c) Medium Sand (d) Coarse Sand

3. Which of the following is not a pozzolanic material? CO2 R

   (a) Fly Ash (b) GGBS (c)Silica fume (d)Silt

4. Choose the odd one among the following retarding chemicals listed below CO2- R

   (a) Phosphates (b) Lignosulphonates

   (c) Borates (d) Copper compounds

5. The maximum cement content not including flyash and GGBS in concrete as per IS 456: 2000 is CO3- R

   (a) 420kg/m^3 (b) 475kg/m^3 (c) 520kg/m^3 (d) 450kg/m^3

6. The nominal mix ratio for M20 grade of concrete is CO3- R

   (a) 1:2:4 (b) 1:1:2 (c) 1:1.5:3 (d) 1:1:3

7. To prevent segregation, the maximum height for placing concrete is CO4- R

(a)100cm (b)125cm (c)150cm (d) 200cm

8. The process of hardening the concrete by keeping its surface moist is known as CO4- R

(a)Wetting (b) Curing (c) Placing (d) Compacting

9. Density of light weight concrete varies from CO5- R

(a)2200 to 2600 kg/m^3 (b) 300 to 1850 kg/m^3

(c)100 to 300 kg/m^3 (d)1850 to 2200 kg/m^3

10. The aspect ratio of the fibre is the ratio of CO5- R

(a) Length to diameter (b) Diameter to length

(c) Diameter to thickness (d) Thickness to length

PART – B (5 x 2= 10Marks)

11. What are bogue's compounds? CO1- U
12. Why the accelerating admixtures are added to concrete? CO2-U
13. What are the factors affecting proportioning of concrete mixes? CO3-U
14. Define Segregation. CO4- R
15. What is geo-polymer concrete? CO5- R

PART – C (5 x 16= 80Marks)

16. (a) (i) Compare the physical properties of 33,43 and 53 grades of cement. CO1- Ana (8)

(ii) How do you determine initial and final setting times of cement as per BIS Code? Explain with neat Sketch. CO1- U (8)

Or

(b) (i) What do you understand by the term grading of aggregates? What importance this term carries as far as design of concrete mix is concerned. CO1- U (8)

(ii) Write short note on Alkali Aggregate reaction. Discuss the various factors promoting Alkali Aggregate reaction. CO1- U (8)

17.	(a)	What is Super plasticizer? Classify and explain the types of Superplasticizer.	CO2- U	(16)
		Or		
	(b)	When are mineral admixtures preferred over chemical admixtures? Explain the use of mineral admixtures bringing out their effect on the concrete properties.	CO2- U	(16)
18.	(a)	Design M20 concrete mix as per BIS 10262:2009, cement –OPC 43, Specific gravity -3.15, sand grading Zone – I, Specific gravity – 2.65 coarse aggregates -20mm angular, Specific gravity – 2.68, exposure Conditions-Mild, Water absorption of coarse aggregate 0.6% and fine aggregate 1%, Workability -75mm (Slump). Assume any missing data.	CO3- App	(16)
		Or		
	(b)	(i) Briefly explain the factors that influence the choice of mix design.	CO3- U	(8)
		(ii) What are the various methods used for proportioning concrete? Explain any two in detail.	CO3- U	(8)
19.	(a)	Define the term workability. What are the various tests conducted to determine the workability of concrete and explain any two of them.	CO4- U	(16)
		Or		
	(b)	What are the different Non-Destructive Testing procedures? Explain Rebound hammer test in detail	CO4- U	(16)
20.	(a)	What is polymer concrete? What are the various types? Explain the properties and applications.	CO5- U	(16)
		Or		
	(b)	Why is lightweight concrete preferred for construction in multistorey building? Explain with respect to their physical characteristics of light weight aggregate.	CO5- U	(16)

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