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Reg. No. : | | | | | | | | | | |

Question Paper Code: 95104

B.E. / B.Tech DEGREE EXAMINATION, NOV 2023

Elective

Civil Engineering

19UCE919 CONCRETE TECHNOLOGY

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. For quality control of Portland cement, the test essentially done is CO1- U

   (a) setting time (b) soundness (c) tensile strength (d) all the above.

2. If 1500 g of water is required to have a cement paste 1875 g of normal consistency, the percentage of water is, CO1- U

   (a) 20% (b) 25% (c) 30% (d) 40%

3. The commonly used material in the manufacture of cement is CO1- U

   (a) sand stone (b) slate (c) lime stone (d) graphite.

4. Which method is the most common and cheaper for water curing? CO1- U

   (a) Ponding (b) Sprinkling (c) Mist curing (d) Wet covering

5. What is the approx. mix proportion for M15? CO1- U

   (a) 1:3:6 (b) 1:2:4 (c) 1:1.5:3 (d) 1:1:2

6. _____ has designated the concrete mixes into a number of grades as M10, M15 CO1- U

   (a) IS 456-2000 (b) IS 456-2010 (c) IS 513-1999 (d) IS 465-2000

7. The cement concrete, from which entrained air and excess water are removed after placing it in position, is called _____ CO1- U

   (a) Vacuum concrete (b) LWC (c) Prestressed concrete (d) Sawdust concrete

8. High-Performance Concrete is _____ as compared to Normal Strength Concrete. CO1- U

(a) Less brittle (b) Brittle (c) More brittle (d) Highly ductile

9. How many types of sulphates attack occur in concrete? CO1- U

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

10. Which of the following compound is used for fine polishing? CO1- U

(a) Aluminum oxide (b) Nitric oxide (c) Silicon carbide (d) Iron oxide

PART – B (5 x 2= 10 Marks)

11. What is the purpose of adding admixture in concrete? CO1- U

12. What are the considerations involved in shrinkage? CO1- U

13. What is meant by statistical quality control? CO1- U

14. What are the special methods of making high strength concrete? CO1- U

15. What is the role of cover in RC structures? CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Briefly explain manufacturing procedure of concrete. CO1- U (16)

Or

(b) Identify the suitable admixtures that extend the workability time of concrete during bridge construction. CO1- U (16)

17. (a) Suggest the suitable NDT method to reveal subsurface voids and defects in R.C.C Columns CO2- App (16)

Or

(b) If you are a site engineer, how can you assess the quality of the concrete being used in the construction of a 12-story building in Madurai? What methods have you used to assess concrete quality? CO2- App (16)

18. (a) We require a mix with a mean 28-day compressive strength (measured on standard cylinders) of 30 Mpa and a slump of 50 mm, Ordinary Portland Cement being used. The maximum size of well - shaped, angular aggregate is 20 mm, its bulk density is 1600 kg/m3, and its specific gravity is 2.64. The available fine aggregate has a fineness modulus of 2.60 and a specific gravity of 2.58. No air entrainment is required CO3- App (16)

Or

	(b)	We require a mix with a mean 28-day compressive strength (measured on standard cylinders) of 40 Mpa and a slump of 50 mm, Ordinary Portland Cement being used. The maximum size of well - shaped, angular aggregate is 20 mm, its bulk density is 1600 kg/m3, and its specific gravity is 2.64. The available fine aggregate has a fineness modulus of 2.60 and a specific gravity of 2.58. No air entrainment is required.	CO3- App	(16)
19.	(a)	Explain in detail about Geo polymer concrete	CO1- U	(16)
		Or		
	(b)	Explain in detail about self-compacting concrete	CO1- U	(16)
20.	(a)	Explain in detail about factors affecting durability of concrete	CO1- U	(16)
		Or		
	(b)	Classify the methods to be used for depositing concrete under water construction	CO1- U	(16)