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

Question Paper Code: 99119

B.E. / B.Tech DEGREE EXAMINATION, NOV 2024

Elective

Civil Engineering

19UCE919 CONCRETE TECHNOLOGY

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

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

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

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

Or

(b) Predict suitable chemical admixture that can be added in concreting which is done below 0^0C in Kashmir 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 CO3- App (16)

aggregate has a fineness modulus of 2.60 and a specific gravity of 2.58. No air entrainment is required

Or

	(b)	Design the mix proportioning for a concrete of M70 grade using silica fume and fly ash is given below. Use of silica fume is generally advantageous for grades of concrete M50 and above and for high performance concrete with special requirements, like higher abrasion resistance of concrete a) Grade designation : M 70 b) Type of cement : OPC 53 grade conforming to IS 269 c) Silica fume : Conforming to IS 15388 d) Maximum nominal size of aggregate : 20 mm e) Exposure conditions as per Table 3 and Table 5 of IS 456 : Severe (for reinforced concrete) f) Workability : 120 mm (slump) g) Method of concrete placing : Pumping h) Degree of supervision : Good j) Type of aggregate : Crushed angular aggregate k) Maximum cement (OPC) content : 450 kg/m3 m) Chemical admixture type : Super plasticizer (Polycarboxylate ether based)	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)	Classify the methods to be used for depositing concrete under water construction	CO1- U	(16)
		Or		
	(b)	Explain in detail about requirements for durability in concrete as per Indian standard	CO1- U	(16)