

**A**

Reg. No. :

--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 99119**

B.E. / B.Tech DEGREE EXAMINATION, DEC 2021

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. Transportation of concrete may done by CO1- U  
(a) Pans and wheelbarrows (b) tipping lorries  
(c) belt conveyors (d) All of the above
2. What are the permissible limits for construction of inorganic matter in water? CO1- U  
(a) 200mg/l (b) 2000mg/l (c) 3000mg/l (d) 500mg/l
3. Tensile strength of concrete is generally taken as \_\_\_\_\_ of the CO1- U  
compressive strength.  
(a) 20% (b) 10% (c) 20% (d) 25%
4. M50 concrete in categorized as CO1- U  
(a) standard concrete (b) ordinary concrete  
(c) high strength concrete (d) lean concrete
5. Proper proportioning of concrete, ensures CO1- U  
(a) desired strength and workability (b) desired durability  
(c) water tightness of the structure (d) all the above
6. Concrete grade lower than \_\_\_\_\_ can not be used in post CO3- U  
tensioned concrete  
(a) M30 (b) M25 (c) M20 (d) M15

7. Which one is not used as air entraining agents? CO1- U  
 (a) Alumina (b) Natural resins (c) Fats (d) Oil
8. In making precast structural units for partition and wall lining purposes, the concrete should be \_\_\_\_\_ CO1- U  
 (a) Vacuum concrete (b) LWC (c) Prestressed concrete (d) Sawdust concrete °
9. Durability of concrete is proportional to \_\_\_\_\_ CO1- U  
 (a) Sand content (b) Water cement ratio  
 (c) Aggregate ratio (d) Cement aggregate ratio
10. How many types of sulphates attack occur in concrete? CO1- U  
 (a) 1 (b) 2 (c) 3 (d) 4

PART – B (5 x 2= 10 Marks)

11. What are the factors affecting concrete properties? CO1- U
12. What are the causes for segregation and bleeding? CO1- U
13. What are the four variable factors to be considered in connection with specifying the concrete mix? CO1- U
14. Enlist the uses of Special Concretes. CO1- U
15. How can use prevent the effect of freezing and thawing in concrete? CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Identify and compare their quality parameters for large projects like rigid pavement construction and water-related structures. CO4- Ana (16)  
 Or  
 (b) Predict suitable chemical admixture that can be added in concreting which is done below 00C in Kashmir CO4- Ana (16)
17. (a) Identify suitable test to determine the compressive strength of concrete cube under applied crushing loads CO2- App (16)  
 Or  
 (b) Suggest the suitable NDT method to reveal subsurface voids and defects in R.C.C Columns. CO2- App (16)

18. (a) Design a Mix as per IS 10262:2019 CO3- App (16)  
Characteristic compressive strength required in the field at 28 days - 45 MPa  
Maximum size of aggregate 20 mm (angular)  
Slump 75 mm  
Degree of quality control Good  
Type of Exposure Mild  
Specific gravity of cement 3.15  
Specific gravity of C.A and F.A is 2.60  
Water Absorption of C.A and F.A is 0.5% & 1%  
Free Surface Moisture of C.A & F.A is NIL & 2%  
Fine aggregate: Conforming to grading Zone II of Table 9 of IS 383

Or

- (b) Design a concrete mix for construction of an elevated water tank. CO3- App (16)  
The specified design strength of concrete (characteristic strength) is 30 MPa at 28 days measured on standard cylinders. Standard deviation can be taken as 4 MPa. The specific gravity of FA and C.A. are 2.65 and 2.7 respectively. The dry rodded bulk density of C.A. is 1600 kg/m<sup>3</sup>, and fineness modulus of FA is 2.80. 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 per cent. Assume any other essential data.
19. (a) Which type of concrete is suitable for radioactive areas: Is it acts as a shield to prevent the radiation from spreading outside and causing any harm to human life? CO6- E (16)
- Or
- (b) Whether the vacuum concrete be used in factories that are involved in production of precast units? Justify. CO6- E (16)

20. (a) Analyse the effects of concrete if concreting operation under taken at a temperature below 5°C is called cold weather concreting CO4- Ana (16)

Or

(b) Analyse the causes of deterioration of concrete in pickle manufacturing industry . CO4- Ana (16)