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

Question Paper Code: U6101

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

Sixth Semester

Civil Engineering

21UCE601- CONCRETE TECHNOLOGY

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10 x 1 = 10 Marks)

1. The purpose of adding pozzolanic material in cement is CO1-U

   (a) To reduce water demand

   (b) To increase workability of cement paste

   (c) To act as a supplementary cementitious material

   (d) None of the above

2. What is the effect of mineral admixtures on the initial and final setting time of cement? CO1-U

   (a) Increases significantly (b) Decreases significantly

   (c) No adverse or significant effect (d) None of the above

3. 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

4. Which of the following options correctly represents the recommended range of the passing ability ratio of self-compacting concrete tested using L-Box? CO1-U

   (a) 0 to 0.2 (b) 0.5 to 0.8 (c) 0.8 to 1 (d) 0.5 to 1

5. Durability of concrete is proportional to _____ CO1-U

   (a) Sand content (b) Water cement ratio

   (c) Aggregate ratio (d) Cement aggregate ratio

6. The quality of concrete, specifically a low w/c ratio and high cement is the best protection against sulphate attack. CO1-U

(a) True (c)False (c) Neither (d) None of the above

7. Efflorescence in cement is caused due to an excess of CO1-U

(a) alkalis (b) iron oxide (c) silica (d) alumina

8. The presence of common salt in sand result in CO1-U

(a) corrosion of reinforcement (b) scaling (c) pitting (d) all of the above

9. Use of HSC in column _____ CO1-U

(a) It increase the size of the column (b) It decrease the size of the column

(c) Doesn't affect (d) Decrease the strength

10. Chloride enters the concrete from CO1-U

(a) cement (b) mixing water (c) admixtures (d) all of the above

PART – B (10 x 3= 30 Marks)

11. Two statement associated with concrete are given .Select the correct option with regards to these statements and explain. CO1-U

Statements

1. As the compaction factor increases, slump decreases.

2. Slump test helps in qualitatively understand the setting time of concrete.

Options

i. Statement 1is false and statement 2 is true
ii. Statement 1is true and statement 2 is false
iii. Statement 1 statement 2 is false
iv. Statement 1 statement 2 is true

12. Explain slump test for measuring workability of concrete. CO1-U

13. What is the purpose of adding an air-entraining admixture to concrete? CO1-U

14. What is the purpose of adding Super plasticizer admixture to concrete? CO1-U

15. In the context of self-compacting concrete (SCC), consider the following statements: CO1-U

Statement 1: SCC is a flowing concrete mix that does not require external compaction effort and consolidates under its own weight.

Statement 2: SCC is prepared in such a way that there is no segregation and at the same time there is enough fluidity for easy placement of the concrete

Choose the correct alternative among the following and explain.

- Statement 1 is true and statement 2 is false
- Statement 1 is false and statement 2 is true
- Both statements are true
- Both statements are false

16. Why FRC is preferred in water retaining structures and repair and rehabilitation work CO1-U

17. What are the applications of Polymer concrete? CO1-U

18. How can you control cracks in a structure? CO1-U

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

20. What are the factors affecting durability of concrete? CO1-U

PART – C (3 x 20= 60 Marks)

21. (a) Suggest the suitable admixtures that extend the strength of concrete at same water cement ration during casting of heavily reinforced members. CO5- Ana (20)

Or

(b) Identify the mineral admixture used to boosts the resistance the chemical and corrosion resistance for marine environmental structures. CO5- Ana (20)

22. (a) What are different types of fibers used in the production of Fibre Reinforced concrete? CO1-U (20)
With respect, Fibre Reinforced concrete explains the following terms.
(i) Aspect ratio
(ii) Percentage volume of fibre

Or

(b) Enumerate the procedure of manufacture, properties and uses of vacuum concrete. CO1-U (20)

23.	(a)	Identify the problems encountered in concrete if concreting done at an atmospheric temperature above 40°C (94°F)	CO6- Ana	(20)
		Or		
	(b)	When RCC Structure constructed in soil, the chemical which is having sulfates of sodium, potassium, calcium or magnesium can lead to what kind of deterioration, Identify its causes	CO6- Ana	(20)