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Question Paper Code: U6101

B.E. / B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

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. What is the permissible limit of organic matter present in water for mixing concrete as per IS 456-2000? CO1-U
(a) 400mg/l (b) 2000mg/l (c) 3000mg/l (d) 200mg/l
2. 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
3. Which of the following tests is best suited for measuring the viscosity of the self compacting concrete? CO1-U
(a) Slump cone test (b) L-Box test (c) J-Ring test (d) V-Funnel test
4. 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
5. Efflorescence in cement is caused due to an excess of CO1-U
(a) alkalis (b) iron oxide (c) silica (d) alumina
6. The permeability of cement paste is mainly due to CO1-U
(a) gel pores (b) capillary pores (c) finer cement grains (d) all of the above

7. In case of plain concrete exposed to sea waves, the grade of concrete should not be lower than CO1- U
 (a) M 15 (b) M 25 (c) M 20 (d) M 30
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. 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
10. As per IS:10262:2009, the standard deviation for M25 concrete is CO1-U
 (a) 4 (b) 3.5 (c) 4.5 (d) 5

PART – B (10 x 3 = 30 Marks)

11. Explain slump test for measuring workability of concrete. CO1-U
12. Describe the importance of quality of water used in concrete. CO1-U
13. Explain curing and list different methods adopted for curing. 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: CO2-App

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

Statement 2: The 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. How can we manufacture sulphur infiltrated concrete? CO1-U
17. What are the different ways of achieving for light weight concrete? CO1-U

18. Mention the advantages of fibre reinforced concrete. CO1-U
19. What changes occur, when hot rolled steel is heated to 500° c? CO1-U
20. How does a concrete structure get affected by heat? CO1-U

PART – C (3 x 20 = 60 Marks)

21. (a) Can you tell the role play of plasticizers & super plasticizers in concrete? Justify Which one is suitable for snowbound region CO4-Ana (20)
Or
(b) Identify the suitable mineral admixtures to increase the hydration process of concrete at early ages for pavement construction. CO4-Ana (20)
22. (a) If fibre reinforced concrete is made from naturally available fibers which are cheap in price then economic construction can be thought of? Is this would be a cost benefit analysis? CO4-Ana (20)
Or
(b) A high-rise building is being constructed in a seismically active zone with a requirement for lightweight construction and high ductility. Analyze the applicability of special concretes such as lightweight concrete, fiber-reinforced concrete, and self-compacting concrete in meeting these requirements. CO4-Ana (20)
23. (a) Explain the mechanism of chloride induced corrosion of steel embedded in concrete. CO1-U (20)
Or
(b) For which structural elements stitching crack method is suitable to repair the crack. CO1-U (20)

