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

Question Paper Code: 49108

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

Elective

Civil Engineering

14UCE908 - CONCRETE TECHNOLOGY

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Hydration of cement is due to chemical action of water with

   (a) Tricalcium silicate and dicalcium silicate
   (b) Dicalcium silicate and tricalcium aluminate
   (c) Tricalcium aluminate and tricalciumalumino ferrite
   (d) All the above

2. The bulk density of aggregates does not depend upon

   (a) size and shape of aggregates (b) specific gravity of aggregates
   (c) grading of aggregates (d) size and shape of the container

3. An aggregate is said to be flaky if its least dimension is less than

   (a) 1/5th of mean dimension (b) 2/5th of mean dimension
   (c) 3/5th of mean dimension (d) 4/5th of mean dimension

4. The increased cohesiveness of concrete, makes it

   (a) less liable to segregation (b) more liable to segregation
   (c) more liable to bleeding (d) more liable for surface scaling in frosty weather

5. The maximum size of coarse aggregate to be used in RCC as per IS456:2000.

   (a) 20 mm (b) 25 mm (c) 30 mm (d) 35 mm

6. The high strength of rapid hardening cement at early stage, is due to its

(a) finer grinding
(b) burning at high temperature
(c) increased lime cement
(d) higher content of tricalcium

7. Internal friction between the ingredients of concrete, is decreased by using

(a) less water
(b) fine aggregates
(c) rich mix
(d) more water and coarse aggregates

8. For road pavements, the cement generally used, is

(a) ordinary Portland cement
(b) rapid hardening cement
(c) low heat cement
(d) blast furnace slag cement

9. What is the maximum density value of light weight concrete?

(a) 1850 kg/m^3
(b) 1950 kg/m^3
(c) 2000 kg/m^3
(d) 2050 kg/m^3

10. What is the size of wire used in ferro cement mesh?

(a) 0.5 to 1 mm dia
(b) 1 to 2 mm dia
(c) 2 to 3 mm dia
(d) 3 to 4 mm dia

PART - B (5 x 2 = 10 Marks)

11. What is grade of cement?

12. What are admixtures?

13. What is retarder?

14. Define Young's modulus.

15. Define ferro-cement.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about the various test conducted on cement. (16)

Or

(b) Explain the test procedure of crushing strength of coarse aggregate used in concrete. (16)

17. (a) What are accelerators and super plasticisers? Explain its use with examples. (16)

Or

(b) Explain about the effect of fly ash on the properties of concrete. (16)

18. (a) Write down the steps involved in ACI method of mix design. (16)

Or

(b) Design a concrete mix for M25 grade concrete using IS recommended guidelines. Assume necessary data. (16)

19. (a) Explain about the tests to determine compressive strength and flexural strength of hardened concrete. (16)

Or

(b) (i) Define modulus of elasticity. How will you determine the modulus of elasticity of concrete? (8)

(ii) How will you determine the workability of concrete using slump test? (8)

20. (a) What is Fibre reinforced concrete? Give its application. (8)

(b) How light weight concrete is produced? Brief its properties and suitable applications. (8)

Or

(b) Discuss in detail about high performance concrete. (16)