

CBCS Scheme

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15CV/CT44

Fourth Semester B.E. Degree Examination, June/July 2017 Concrete Technology

Time: 3 hrs.

Max. Marks: 80

Note: 1. Answer FIVE full questions, choosing one full question from each module.
2. Use of IS – 10262 – 2009 is permitted.

Module-1

- 1 a. Write the chemical composition of cement. Write the flow chart for dry process. (08 Marks)
b. Explain the importance of size, shape and texture of aggregate. (08 Marks)

OR

- 2 a. Explain the role of Admixtures in Concrete Technology. (08 Marks)
b. Name any four types of cement. State the properties and applications of any two types of cement. (08 Marks)

Module-2

- 3 a. Define Workability. Explain the factors influencing workability of concrete. (08 Marks)
b. Write note on Segregation and Bleeding. (08 Marks)

OR

- 4 a. Why curing is needed to concrete? Explain curing methods. (08 Marks)
b. Why compaction is required to concrete? Explain Compaction methods by vibration. (08 Marks)

Module-3

- 5 a. Explain the factors influencing the strength of concrete. (08 Marks)
b. Write note on : i) Creep ii) Shrinkage of concrete. (08 Marks)

OR

- 6 a. Explain Maturing concept of concrete. (08 Marks)
b. The strength of a sample of fully matured concrete is found to be 40MPa. Find the strength of identical concrete at the age of 7 days when cured at an average temperature during day time at 20°C and night time at 10°C. Take A = 32 , B = 54. Use % strength of concrete at maturity = $A + B \log_{10} \left(\frac{\text{maturity}}{1000} \right)$. (08 Marks)

Module-4

- 7 Design a concrete mix for M₂₀ grade of concrete with the following design stipulation as per IS 10262 – 2009 guide lines.
a. Grade designation: M20.
b. Type of cement : Ultra Tech PPC.
c. Maximum size of Aggregate [MSA] : 20mm
d. Minimum cement content : 320 kg/m³.
e. Maximum W/C ratio : 0.55.
f. Workability : 50 – 75mm (slump)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- g. Exposure condition : Mild
- h. Degree of supervision : Good.
- i. Type of Aggregate : Crushed angular aggregate.
- j. Max. cement content : 450 kg/m^3 .
- k. Chemical Admixture : Not recommended.
- l. Specific gravity of cement : 3.05.
- m. Specific gravity of Coarse Aggregate : 2.68.
- n. Specific gravity of Fine Aggregate : 2.66.
- o. Water absorption of Coarse Aggregate : 0.85%.
- p. Water absorption of Fine Aggregate : 1.15%.
- q. Free (surface) moisture of Coarse Aggregate : NIL.
- r. Free moisture of Fine Aggregate : NIL.
- s. Sieve Analysis of Coarse Aggregate : Conforming to table 2 of IS : 383.
- t. Sieve Analysis of Fine Aggregate : Conforming to zone – II of IS : 383. (16 Marks)

OR

- 8 What is meant by concrete mix design? Write the steps involved in the method of mix design (IS -10262 - 2009). (16 Marks)

Module-5

- 9 a. Explain the materials used for self – compacting concrete. (08 Marks)
b. State the advantages and disadvantages of RMC. (08 Marks)

OR

- 10 a. Explain the fiber types used in Fiber Reinforced Concrete. (08 Marks)
b. State the advantages of Light Weight Concrete. (08 Marks)

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