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(Revision – 2015/19)

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Reg. No……………………
Signature ………………….

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2024

CONCRETE TECHNOLOGY

Note: - IS 456 and IS 10262 may be permitted

[Maximum Marks: **100**] [Time: **3** Hours]

PART-A

[Maximum Marks: **10**]

I. (Answer ***all*** questions in one or two sentences. Each question carries ***2*** marks)

1. Identify the ingredients of concrete.
2. Define segregation.
3. List any four methods of concrete mix design.
4. Define workability of concrete.
5. Identify carbonation as a problem in concrete. (5 x 2 = 10)

PART-B

[Maximum Marks: **30**]

II. (Answer ***any five*** of the following questions. Each question carries ***6*** marks)

1. Explain hydration of cement.
2. List the important properties of hardened concrete.
3. Explain the importance of the term water-cement ratio.
4. Identify the variable parameters in mix design.
5. Define variance, standard deviation and co-efficient of variation for concrete mix design.
6. Distinguish between high strength concrete and high performance concrete.
7. Explain the causes and effect of freezing and thawing on concrete and its remedial measures.

(5 x 6 = 30)

PART-C

[Maximum Marks: **60**]

(Answer ***one*** full question from each Unit. Each full question carries **15** marks)

UNIT – I

III. a. Describe the various types of admixtures. (8)

b. Elaborate elongation index and impact tests for coarse aggregates. (7)

OR

IV. a. Illustrate any four lab tests for cement. (8)

b. State the importance of concrete as a construction material. (7)

UNIT – II

V. a. Explain compressive strength test of concrete. (8)

b. Identify the factors influencing the strength of concrete. (7)

OR

VI. a. Describe slump test for concrete. (8)

b. With a flow chart, explain the steps in the manufacture of concrete. (7)

UNIT- III

VII. a. List the procedure for concrete mix design as per IS 10262-2009. (9)

b. Explain the basic principles of concrete mix design. (6)

OR

VIII. Design a concrete mix of grade M30 with the following requirements:

Max size of aggregates - 20 mm

Degree of workability - 75 mm slump

Degree of quality control - good

Type of exposure - moderate

Cement OPC 43 grade, specific gravity 3.05,

Specific gravity of coarse aggregate 2.80, fine aggregate 2.60

Water absorption & free surface moisture - Nil

River sand conforming to zone II. (15)

UNIT - IV

IX. a. Explain the precautions to be taken while concreting in extremely cold weather. (8)

b. Describe any seven types of special concrete. (7)

OR

X. a. Describe the factors influencing durability of concrete. (8)

b. Explain the causes, problems and remedial measures for corrosion of reinforcement. (7)

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