

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018**

**ELECTIVE II - CONCRETE TECHNOLOGY.**

[Time : 3 hours

(Maximum marks : 100)

[Note :— I.S 456/2000, I.S 10262/2007 are permitted in the examination for reference.]

**PART — A**

(Maximum marks : 10)

Marks

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

1. Why gypsum is added while manufacture of cement ?
2. Define bulking of sand.
3. State the necessity of curing.
4. Define concrete mix design.
5. Define creep in concrete.

(5×2 = 10)

**PART — B**

(Maximum marks : 30)

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

1. State the important ingredients of cement with their percentage.
2. What are the functions of chemical admixtures in concrete ?
3. Define water cement ratio. How does it influence the concrete strength.
4. State the principal properties of hardened concrete.
5. Distinguish between nominal mix and design mix.
6. How geo-polymer concrete is prepared ?
7. State the effects of shrinkage on concrete.

(5×6 = 30)

## PART — C

(Maximum marks : 60)

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

## UNIT — I

- III (a) What are mineral admixtures and state the functions of each. 8  
 (b) State the functions of ingredients in concrete with their limitations. 7

OR

- IV (a) List the factors affecting water cement ratio. 8  
 (b) Explain the factors which affect the alkali aggregate reaction. 7

## UNIT — II

- V (a) Explain the aggregate cement ratio and affects of cement content on the strength of concrete. 8  
 (b) What are the factors affecting the durability of concrete ? 7

OR

- VI (a) What are the factors affecting workability of concrete ? 8  
 (b) List the advantages of cement concrete. 7

## UNIT — III

- VII (a) List the basic datas required for the design of a concrete mix. 8  
 (b) State the purposes and requirements of concrete mix design. 7

OR

- VIII Design a concrete mix of M25 grade as per IS 10262/2007 from the following data. 15  
 Max. size of aggr 20 mm  
 Degree of workability - 0.90 compacting factor  
 Degree of quality control good  
 Type of exposure moderate  
 Cement OPC 43 grade, sp. gr. 3.15,  
 Sp. Gr. of coarse aggregate 2.65, fine aggregate 2.60  
 Water absorption coarse 0.60%, fine 1.2%  
 River sand conforming to zone 1

## UNIT — IV

- IX (a) State the characteristic of light weight concrete. 8  
 (b) State the recommended practices and preservation of cold weather concrete. 7

OR

- X (a) State and explain various defects in concrete. 8  
 (b) What is sulphate attack on concrete and explain briefly. 7