Total number of printed pages—4

53 (CE 504) CNTC

2021

CONCRETE TECHNOLOGY

Paper : CE 504

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Explain the basic properties of cement compounds formed in high clinkering temperature. 10

   (b) Enumerate various tests conducted on cement to access its characteristics. 5

   (c) Explain hydration of cement. 5

2. *(a)* Explain the heat of hydration. 5

Contd.

(b) What are Bogue's compounds and when are these formed? 4+1=5

(c) Describe about the different types of cements. 10

3. (a) What are the different types of aggregates? 5

(b) Describe about the different characteristics of aggregates. 10

(c) What do you mean by bulking of sand? 5

4. (a) Define durability of concrete. What are the requirements for preparing durable concrete? What are the factors affecting durability of concrete? 2+3+5=10

(b) Differentiate nominal mix and design mix. 5

(c) How can the use of admixtures improve the properties of concrete, in general? Give some examples of admixtures. 4+1=5

5. Determine the proportion of the ingredients of concrete using IS Code from the following data : 20

   (i) Characteristic compressive strength required in the field at 28 days = 30 N/mm^2.

   (ii) Maximum size of aggregate = 40 *mm*

   (iii) Slump required = 50 *mm*

   (iv) Type of aggregate = subangural

   (v) Chemical admixture = superplasticizer

   (vi) Method of concrete placing = pumping

   (vii) Sp. gravity of admixture = 1.44

   (viii) Sp. gravity of Cement, FA and CA are 3.15, 2.74 and 2.75 respectively.

   (ix) Sand conforming to zone III.

6. Write short notes on : ***(any four)*** 5×4=20

   (a) Slump test

   (b) Aggregate impact test

(c) Extra rapid hardening cement

(d) Accelerators and retarders

(e) Bleeding and segregation.