53 (CE 504) CNTC

2016

CONCRETE TECHNOLOGY

Full Marks : 100

Time : Three hours

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

Answer ***any five*** *questions out of* ***seven.***

1. *(a)* Discuss in brief disadvantages of concrete. 3

(b) What do you understand by grade of concrete ? Discuss with example. 3

(c) Enumerate various tests conducted on cement to access its characteristics. Explain *any one* test in detail. 3+7=10

(d) What are the different types of concrete recommended by IS 456 : 2000 ? 4

2. *(a)* Explain the basic properties of cement compounds. 10

(b) Write a note on hydration of cement. 4

(c) In what type of condition the following types of cement are used — 2×3=6

(a) Quick setting cement

(b) Sulphate resisting cement

(c) Portland slag cement.

3. *(a)* Explain the classification of aggregates. 8

(b) Describe the aggregate crushing test. 8

(c) Determine flakiness index and elongation index of the coarse aggregate for the following data

(i) Weight passing through 63*mm* IS sieve and retained in 6·3*mm* IS sieve = 550*gm*

(ii) Weight passing through thickness gauge = 105*gm*

(iii) Weight retained on length gauge = 135*gm*

(iv) Total weight of coarse aggregate takes = 3*kg* 4

4. *(a)* Describe honeycombing and efflorescence. Why they occur? Explain their remedies. 4+4+2=10

(b) Describe the properties of hardened concrete. What do you mean by creep of concrete? What are the factors affecting creep? 4+2+4=10

5. *(a)* Design a concrete mix of *M* 25 for the following data — 16

(i) Specific gravity of cement = 3·16
Fine aggregate = 2·63
Coarse aggregate = 2·62

(ii) Sand conforming to zone III

(iii) Size of aggregate = 20*mm*

(iv) Shape of aggregate = angular

(v) Slump required = 50*mm*

(vi) W/C = 0·5

(b) What are the different types of slumps? 4

6. *(a)* Describe about light weight concrete. What are the advantages of light weight concrete? 5+5=10

(b) Explain non destructive testing. What are the various methods of NDT of concrete? 5+5=10

7. Write short notes on : 4×5=20

(a) Ready Mix Concrete (RMC)

(b) Flow test

(c) Segregation

(d) Extra rapid hardening cement.