

Total number of printed pages-4

53 (CE 504) CRTC

2017

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) What do you mean by uniform grading and gap grading ? How grading of aggregate influence workability of concrete ? 4+2=6
- (b) Explain aggregate crushing test. 5
- (c) Determine aggregate crushing value from the following data — 4
 - (i) Total weight of aggregate taken = 10kg.
 - (ii) Weight of aggregate passing through 12.5mm IS sieve and retained on 10mm IS sieve = 3kg.

Contd.

- (iii) Weight of aggregate passing through 2.36mm IS sieve after testing = 756gm.
- (d) Explain about the chemical composition and chemical compounds of cement. 5
2. (a) What do you mean by hydration of cement and heat of hydration ? 5
- (b) Explain the standard consistency test procedure of cement. 8
- (c) Why is gypsum added during clinker grinding ? 2
- (d) What are the requirements of concrete mix design ? 5
3. Determine the proportion of the ingredient of concrete using IS 10262:2009 from the following data — 20
- (i) Characteristics compressive strength required in field at 28 days = 20N/mm^2 .
- (ii) Exposure condition = Mild
- (iii) Maximum size of aggregate = 40mm

- (iv) Slump required = 100mm
- (v) Shape of aggregate = Sub angular
- (vi) Admixture used = Super plasticizer
- (vii) Specific gravity of cement, CA and FA are 3.16, 2.64 and 2.63 respectively
- (viii) Sand conforming to zone II
- (ix) Specific gravity of admixture = 1.144.

4. (a) Write a note about light weight concrete. What are the advantages of light weight concrete ? 4+6=10

(b) What do you mean by segregation ? How many types of segregation are there ? What are the conditions favourable for segregation ? What are its remedy ? 2+3+3+2=10

5. (a) Describe the process of efflorescence. How can it be removed ? 5+5=10

(b) What do you mean by curing of concrete ? What are the methods of curing ? 5+5=10

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

- (a) Bulking of sand
- (b) Plasticizers
- (c) Extra rapid hardening cement
- (d) Portland slag cement
- (e) Non destructive testing.