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53 (CE 504) CRTC

2018

## 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 out of six.***

1. (a) Explain workability. What are the factors that affect workability? How workability can be measured?

2+8+4=14

- (b) What do you mean by curing? What are the methods of curing? What are the requirements of water to be used for curing?

6

Contd.

2. Determine the proposition of the ingredients of concrete using IS code method from the following data. 20

(i) Characterstic compressive strength required in the field at 28 days =  $40N/mm^2$

(ii) Maximum size of aggregate = 20mm

(iii) Type of aggregate = angular

(iv) Slump required = 100mm

(v) Exposure condition = severe

(vi) Chemical admixture = super plasticizer

(vii) Mineral admixture = fly ash

(viii) Method of concrete placing = pumping

(ix) Specific gravity of cement, FA, CA and fly ash are 3.15, 2.74, 2.74 and 2.2 respectively

(x) Water absorption of FA and CA are 1.0 and 0.5 per cent respectively

(xi) Free surface, water content of FA and CA are 0.00 and 0.00 respectively

(xii) Sand conforming to zone I

(xiii) Specific gravity of admixture = 1.144

3. (a) Explain the procedure of determining flakiness and elongation index, aggregate impact value and aggregate crushing value. 10

(b) Write a note on ready mix concrete. 5

(c) What are the advantages of light weight concrete? 5

4. (a) Define grade of concrete. What are the various grades according to IS 456:2000? 5

(b) Write the chamical composition of portland cement. 5

(c) Explain the standard consistency test procedure. Why standard consistency test is done? 8+2=10

5. (a) Define durability? What are the factors affecting durability? 8

(b) Explain efflorescence? How can it be removed? 5+5=10

(c) Why gypsum is added in cement? 2

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

- (a) Grading of aggregates
- (b) Bulking of sand
- (c) Creep of concrete
- (d) Portland slag cement
- (e) Ferro cement