

Total number of printed pages-4

53 (CE 504) CRTCC

2015

## 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 **seven**.

1. (a) (i) What is the necessity of curing of concrete? 2
- (ii) Mention different methods of curing of concrete? 2
- (iii) Discuss the fresh properties of concrete. (Including bleeding and segregation). 6
- (b) (i) Briefly focus on different internal and external factors that affect durability? 6

Contd.

- (ii) How use of admixtures can improve the properties of concrete, in general? 4
2. (a) What are the main components of portland cement? Explain the basic properties of these components. 10
- (b) What are the advantages and disadvantages of concrete? What is meant by quality control in concrete? 10
3. (a) Design a concrete mix for a reinforced concrete work, which will be exposed to the moderate condition. Concrete is to be designed for a mean compressive strength of  $25\text{MPa}$  at the age of 28 days. A requirement of  $25\text{mm}$  cover is prescribed maximum size of aggregate is  $20\text{mm}$  uncrushed aggregate will be used. Sieve analysis shows that 50% passes through  $600\mu$  sieve. The bulk specific gravity of aggregate is found to be 2.65. 10
- (b) Define workability. What are the tests used for workability? 10

4. (a) State the difference between the wet process and dry process of cement manufacturing? What is the importance of gypsum addition in manufacturing of cement? 10
- (b) What is sulphate attack in concrete? Give some method of controlling sulphate attack? 10
5. (a) Differentiate between — 5×2=10
- (i) Plasticizer and super plasticizer.
- (ii) Ordinary portland cement and puzzolena portland cement.
- (b) What is soundness of aggregate? Explain the procedure of aggregate impact value test. 10
6. (a) Define Abram's law and state its limitations? What is creep in concrete? 10
- (b) What do you mean by non destructive test of concrete? Explain USPV and Rebound hammer test? 10
7. Write short notes — (**any five**) 5×4=20
- (a) Bulking of sand.

- (b) Setting time of cement.
- (c) Heat of hydration.
- (d) Bleeding and segregation.
- (e) Alkali-aggregate reaction.
- (f) Ferro-cement and its application.