53 (CE 504) CRTC

2014

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)* Define workability ? Explain the factors affecting workability of a fresh concrete. 2+8

   (b) Write short notes on the following :– 2×5

   (i) Creep of concrete and its effect.

   (ii) Modulus of elasticity of concrete.

2. *(a)* What is sulphate attack in concrete ? Give some methods of controlling sulphate attack. 4+6

(b) The strength of a sample of fully matured concrete is found to be 50.00 *MPa*. Find the strength of identical concrete at the age of 7 days when cured at an average temperature during day time at 25°*C* and night time at 10°*C*. (take constants $A=42$ and $B=46{\cdot}5$). 5

(c) Explain slump test to determine the workability of concrete. 5

3. (a) What are the factors affecting the compressive strength of concrete ? Explain. 10

(b) What is carbonation ? Explain its Process and give the factors on which rate of carbonation depends. 10

4. (a) Design a concrete mix for a reinforced concrete work which will be exposed to the moderate condition. The concrete is to be designed for a mean compressive strength of 30 *MPa* at the age of 28 days a requirement of 25*mm* cover is prescribed maximum size of aggregate is 20*mm* uncrushed aggregate will be used. Sieve analysis shows that 50% passes through 600μ sieve. The Bulk specific gravity of aggregate is found to be 2·65. 10

(b) Differentiate between – 2×5

(i) Bleeding and Laltance

(ii) Segregation and Compaction

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

(i) Alkali-aggregate reaction

(ii) Ferro-cements and its applications

(iii) Heavy weight and light weight concrete.

(iv) Blended concrete

(v) Concrete containing polymer.

6. (a) What is soundness of aggregate ? Explain the procedure of aggregate impact value test. 4+6

(b) Explain how a concrete behaves under various stresses. 10

7. Differentiate between : 4×5

(i) Accelerators and Retarders

(ii) Plasticizer and Super-plasticizer

(iii) Ordinary portland cement and portland pozzolana cement.

(iv) USPV and Rebound hammer test.
