

Diploma in Civil Engineering

Term-End Examination

June, 2010

01005

BCE-044 : CONCRETE TECHNOLOGY

Time : 2 hours

Maximum Marks : 70

Note : Answer *any five* questions including Question number 1 which is *compulsory*.

1. (a) Answer *any two* of the following in brief (2-3 lines only) : $2 \times 2 = 4$
- (i) What is meant by heat of hydration ?
 - (ii) What are the raw materials used for manufacture of cement ?
 - (iii) Differentiate between fresh concrete and hardened concrete.
- (b) Fill in the blanks (*any four*) : $4 \times 1\frac{1}{2} = 6$
- (i) Sometimes special ingredients, added to concrete, to improve some of its properties are called _____ .
 - (ii) Segregation is the property of concrete in _____ stage.
 - (iii) Needle vibrators should be penetrated in _____ direction in concrete.
 - (iv) Vee-Bee consistometer test is used to determine _____ of concrete.
 - (v) Soundness of cement is determined by _____ apparatus.

(c) Select the correct option (*any four*) : **4x1=4**

- (i) Road Note No. 4 is the method of designing (the road/the concrete mix).
- (ii) Fineness modulus gives an idea about (size/shape) of the aggregate.
- (iii) The continuous and permanent deformation of concrete under sustained loading is known as (shrinkage/creep).
- (iv) Initial setting time of OPC is (20 minutes/30 minutes).
- (v) The first operation of finishing a concrete work is (screeding/floating/trowelling).

2. (a) Differentiate between *any two* of the following : **2x4=8**

- (i) Initial setting and final setting time.
- (ii) Weigh batching and volume batching.
- (iii) Dry process and wet process of manufacture of cement.

(b) Define the following (*any two*) : **2x3=6**

- (i) Grading of aggregate.
- (ii) Soundness of cement.
- (iii) Flakiness index.

3. (a) Discuss various field tests conducted on cement. 8
 (b) What are the precautions to be taken for the storage of cement? 6
4. (a) Explain the various types of cement with their uses. 8
 (b) Describe bulking of sand with neat sketches. 6
5. (a) Explain slump cone test with labelled sketches. 8
 (b) What are the factors affecting workability of concrete? 6
6. (a) Define curing. Explain methods of curing. 2+6=8
 (b) Enlist types of mixers. Explain any one with a labelled sketch. 2+4=6
7. Write short notes on *any four* of the following : 4x3½=14
 (a) Cement factor and yield of concrete.
 (b) Objectives of mix design.
 (c) Tremie method.
 (d) Pre-stressed concrete.
 (e) RMC.
 (f) Particle size distribution curves.