

DIPLOMA IN CIVIL ENGINEERING
DCLE(G) / DCLEVI

Term-End Examination

00842

December, 2016

BCE-044 : CONCRETE TECHNOLOGY

Time : 2 hours

Maximum Marks : 70

Note : Answer five questions in all. Question no. 1 is compulsory.

1. (a) Answer any two of the following in brief: $2 \times 2 = 4$

- (i) Explain the factors affecting creep of concrete.
- (ii) Define concrete and state the ingredients of concrete.
- (iii) Enlist the properties of concrete in plastic stage.

(b) Fill in the blanks (any four).

$$4 \times 1 \frac{1}{2} = 6$$

- (i) The property of the ingredients to separate from each other while placing the concrete is called as _____.
- (ii) The property of fresh concrete, in which the water in the mix tends to rise to the surface while placing the compacting, is called as _____.

- (iii) Minimum water-cement ratio required for full hydration of cement is _____ .
- (iv) Curing period required is minimum for the concrete using _____ .
- (v) The strength of concrete after one year as compared to 28 days strength is about _____ .
- (c) Select the correct option (any **four**). $4 \times 1 = 4$
 - (i) Air entrainment in the concrete increases [workability/strength/unit weight].
 - (ii) Admixtures which cause early setting, and hardening of concrete are called [workability/accelerators/retarders].
 - (iii) Poisson's ratio for concrete [increases/decreases/does not change] with richer mixes.
 - (iv) The factor of safety for steel is [same/lower/higher] than that for concrete.
 - (v) Increase in fineness modulus of aggregate indicates [finer/coarser/gap] grading.

- 2. (a) Draw the process diagram of concrete and explain different operations of concreting. 7
- (b) Explain different chemical ingredients of cement and their functions. 7

3. (a) Explain any *one* of the following with the help of a neat sketch : 7
- (i) Setting time test of cement
 - (ii) Soundness test of cement
- (b) Explain any *one* of the following with the help of a neat sketch : 7
- (i) Slump test
 - (ii) Vee-Bee consistometer test
4. (a) Explain the importance of quality of water used for manufacturing the concrete. List the various types of important impurities, likely to be present in water. 5+2=7
- (b) Describe the various methods of storing cement. Differentiate between the weigh batching and volume batching of aggregate. 3+4=7
5. (a) Discuss the methods of transportation of concrete. What are the measures to be taken during transportation of concrete ? 4+3=7
- (b) Explain different methods of curing. What are water curing and membrane curing ? 3+4=7

6. Write short notes on any *four* of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Screeding
 - (b) Expansion and Contraction Joints
 - (c) Light-weight Concrete
 - (d) Advantage of Pre-cast Concrete
 - (e) Ultra-light-weight Concrete
-