

Diploma in Civil Engineering
Term-End Examination
June, 2008

BCE-044 : CONCRETE TECHNOLOGY

Time : 2 hours

Maximum Marks : 70

Note : Answer any *five* questions including Q. No. 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 P.C.C. and R.C.C. ?
 - (ii) What is meant by initial setting time of cement ?
 - (iii) What is buttering of the mixer ?
- (b) Fill in the blanks (any *four*) : $4 \times 1 \frac{1}{2} = 6$
- (i) The volume of one bag of cement is _____.
 - (ii) Soundness of cement is measured by using _____ apparatus.
 - (iii) The first operation of finishing the concrete is called _____.

(iv) Increase in volume of the sand due to the presence of moisture is known as _____

(v) Concrete is strong enough in resisting _____ stresses.

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

(i) Los Angeles test is used to determine. (Aggregate crushing value/Aggregate impact value/Aggregate abrasion value)

(ii) Coarse aggregate are those retained on (4.75 mm/75 micron/2.36 mm) I.S. sieve.

(iii) Excess compaction of fresh concrete will lead to (bleeding/further densification) of concrete.

(iv) Road Note No. 4 is the method of designing (the road/the concrete mix/the R.C.C. members).

(v) Workability of concrete mix is more with (angular/rounded/flaky) aggregates.

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

(i) Accelerator and Retarder admixtures

(ii) Expansion joint and Contraction joint

(iii) Bleeding and Segregation of concrete

- (b) Define the following (any *two*) : 2x3=6
- (i) Grade of concrete
 - (ii) Fineness modulus
 - (iii) Consistency of cement
3. (a) Describe any four properties of concrete in the hardened stage. 8
- (b) Enlist various types of cement. Differentiate between dry process and wet process of manufacture of cement. 2+4=6
4. (a) Enlist various physical properties of aggregate. Describe Aggregate Impact Value Test. 2+6=8
- (b) Explain the precautions to be observed during storing of cement in stacks. 6
5. (a) Explain the factors affecting workability in detail. 8
- (b) Describe Compaction Factor Test of workability. 6
6. (a) What is meant by curing of concrete ? Enlist various methods of curing of concrete and explain any one in detail. 2+6=8
- (b) Determine the quantities of coarse aggregate and fine aggregate for one bag of cement to prepare a mix of 1 : 1.5 : 3 proportion by volume (in dry state). Consider the bulking of fine aggregate as 18%. 6

7. Write short notes on any **four** of the following : $4 \times 3\frac{1}{2} = 14$

- (a) Light weight concrete
- (b) Pre-stressed concrete
- (c) Pre-cast concrete
- (d) Yield of concrete
- (e) Minimum voids-method of mix design
- (f) Use of gypsum in controlling the flash set of cement