

Diploma in Civil Engineering

Term-End Examination

June, 2007

BCE-044 : CONCRETE TECHNOLOGY

Time : 2 hours

Maximum Marks : 70

Note : Answer any **five** questions including question no. 1 which is compulsory.

1. (a) Answer any **two** of the following in brief

(in 2 – 3 lines each) :

2×2=4

- (i) Define elongated aggregates.
- (ii) Why is gypsum added during manufacturing of cement ?
- (iii) How does the temperature affect the workability of concrete mix ?

(b) Fill in the blanks (any **four**) :

4×1 $\frac{1}{2}$ =6

- (i) _____ compound provides good ultimate strength to the cement.
- (ii) The continuous and permanent deformation of concrete under sustained loading is known as _____ of concrete.

- (iii) _____ sand is used for determining the compressive strength of cement.
- (iv) Vee-Bee test is used to determine _____ of concrete mix.
- (v) One bag of cement is _____ litres.

(c) Select the correct option (any **four**) : $4 \times 1 = 4$

- (i) Segregation is (desirable/not desirable) for good concrete.
- (ii) Rodding is a method of (Hand compaction/compaction by vibration).
- (iii) Bulking phenomena is related with (fine aggregates/coarse aggregates).
- (iv) Los Angeles Test is used to determine (Aggregate Abrasion value/Aggregate Crushing value).
- (v) (C_3A / C_4AF) generates less heat of hydration.

2. (a) Differentiate between any **two** of the following : $2 \times 4 = 8$

- (i) P.C.C. and R.C.C.
- (ii) Water absorption and Free moisture content of aggregates
- (iii) True slump and Shear slump

- (b) Give the specific applications of the following types of cement (any **three**) : $3 \times 2 = 6$
- (i) Expanding cement
 - (ii) Sulphate resisting cement
 - (iii) Low heat Portland cement
 - (iv) Rapid hardening cement
3. (a) Enlist the Bouge's compounds of cement. Discuss the salient features of hydration of these compounds. $2 + 8 = 10$
- (b) What do you mean by soundness of cement? Name the apparatus by which soundness of cement is determined. $3 + 1 = 4$
4. (a) With the help of neat curve, define and discuss bulking of sand. 8
- (b) Define fineness-modulus of aggregate. Which property of aggregates is indicated by its fineness-modulus? $4 + 2$
5. (a) Define workability of concrete mix. Discuss the effects of the following on the workability of concrete mix (any **two**) : $3 + 2 \times 2 \frac{1}{2} = 8$
- (i) Shape of aggregate
 - (ii) Temperature
 - (iii) Aggregate-cement ratio
- (b) Give the factors responsible for segregation of concrete. 6

6. (a) Discuss the advantages of storing cement in silos as compared to storing in stacks. 5
- (b) Describe the precautions to be observed during transporting of concrete. 5
- (c) Give the objectives of curing of concrete. 4
7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Bleeding of concrete
- (b) Membrane curing
- (c) Abrams' water-cement ratio law
- (d) Fibre reinforced concrete
- (e) Requirements of a good form work
- (f) Construction joints in concrete