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BCE-044

DIPLOMA IN CIVIL ENGINEERING
DCLE(G) / DCLEVI

Term-End Examination

00787

December, 2017

BCE-044 : CONCRETE TECHNOLOGY

Time : 2 hours *Maximum Marks : 70*

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

1. (a) Discuss any ***two*** of the following in brief (2 – 3 lines only) : *2×2=4*

(i) Compaction of Concrete

(ii) Calcareous Materials

(iii) Fineness of Cement

(b) Fill in the blanks (attempt any ***four***). $4 \times 1\frac{1}{2} = 6$

(i) The time corresponding to the paste becoming a hard mass is known as _____ of cement.

(ii) During grinding of cement, about 2% to 3% of _____ is added.

(iii) Silica in excess causes the cement to set _____ .

(iv) Lime in excess makes the cement _____ .

(v) The aggregates of size ≥ 4·75 mm are called _____ aggregates.

(c) Select the correct option (attempt any ***four***). *4×1=4*

(i) In concrete, the only lubricant available is (water/vibrator/fine particles).

(ii) ($C_2S/C_3A/C_4AF$) contributes little strength of concrete.

(iii) (Rounded/Flaky/Elongated) aggregates provide good workability.

(iv) (Cylinder/Cube) test is conducted for compressive strength of cement.

(v) (Higher/Lower) grades of concrete are required in prestressed concrete.

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

(i) Rapid hardening cement and Sulphate resisting cement

(ii) Volume Batching and Weight Batching of aggregates

(iii) Hand mixing and Machine mixing of concrete ingredients

(b) Define any ***two*** of the following : $2 \times 3 = 6$

(i) Initial setting time

(ii) Grading of aggregate

(iii) Hydration of cement

3. (a) Explain setting time test of cement. 8

(b) List the various types of impurities likely to be present in water and give their tolerable concentration. 6

4. (a) Explain Aggregate Crushing Value test. 8

(b) Discuss the effect of the following on the strength of concrete : 6

(i) Size of aggregate

(ii) Shape/texture of aggregates

5. (a) Define workability. Explain any one test to determine workability. 8

(b) Describe segregation of concrete and list out the factors responsible for it. 6

6. (a) What do you mean by transportation of concrete ? What precautions should be taken during transportation of concrete ? 8

(b) What is curing ? State its importance. Briefly explain water curing. 6

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

(a) Bulking of Sand

(b) Formwork

(c) Fibre Reinforced Concrete

(d) Colcrete

(e) Steam Curing

(f) Fineness Modulus