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BCE-044

Diploma in Civil Engineering

00612

Term-End Examination

December, 2011

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) **2x2=4**

(i) Define Admixture

(ii) Explain screeding in brief.

(iii) Define the hardness and toughness of aggregate.

(b) Fill in the blanks ***(any four)*** : **4x1½=6**

(i) In concrete the only lubricant available is _____.

(ii) The tensile strength of cement at the end of 7 days should not be less than _____.

(iii) One bag of cement is_____ litres.

(iv) The value of fineness modulus in course aggregate is_____.

(v) Buttering the mixer is required before the _____ batch.

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

(i) Bulking of sand is (decrease/increase/ no change) in volume.

(ii) The concrete should not be thrown from a height more than (1m/2m/3m)

(iii) The aggregate of size ≥ 4.75mm are called as (coarse aggregate/medium aggregate/ fine aggregate)

(iv) Workability of concrete mix/ increases/decreases/does not change) with increase in water content.

(v) The final operation of finishing is called (floating/screeding/trowelling)

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

(i) Segragation and Bleeding of concrete.

(ii) Volume batching and weight batching.

(iii) False set and Flash set of cement

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

(i) Fineness modulus method

(ii) Concrete

(iii) Hot weather concreting

3. (a) Draw the process diagram of concrete. State the different operations of concreting. **4+4=8**

(b) What are the raw materials required for manufacture of cement ? Describe the procedure of determining the compressive strength of cement in laboratory. **2+4=6**

4. (a) Explain various factors responsible for Alkali - Aggregate Reaction. 6

(b) Explain the procedure for determining flakiness and elongation index. Define importance of grading curve. 6+2=8

5. (a) Explain the requirement of water for hydration of cement. Enlist various types of important impurities that may be present in water. 4+4=8

(b) Explain with the help of a neat sketch describe the following tests for measuring workability of concrete mix (any one). 6

(i) Stump test

(ii) Compaction factor test

6. (a) Determine the quantity 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 22%. 6

(b) Explain advantage and disadvantage of pre-cast concrete. 4+4=8

7. Write short notes on ***any four*** of the following : **4x3½=14**

(a) Yield of concrete.

(b) Voids method in aggregate

(c) Ultra-light weight concrete

(d) Formwork for walls

(e) Transportation of concrete

(f) Fibre reinforced concrete