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BCE-044

DIPLOMA IN CIVIL ENGINEERING (DCLE(G)) DCLEVI

Term-End Examination

June, 2014

BCE-044 : CONCRETE TECHNOLOGY

Time : 2 hours *Maximum Marks : 70*

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

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

(i) Define "Characteristic strength of concrete".

(ii) Give specific use/application of "Lean concrete".

(iii) Write function of ribs on HYSD reinforcement.

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

(i) Grade of mild steel is Fe _____ .

(ii) One bag of cement weighs _____ kg.

(iii) The property of concrete which reflects the resistance against environmental forces is called as _____ .

(iv) Standard size of cube mould used for determining the compressive strength of cement is _____ .

(v) Measuring the ingredients of concrete for manufacturing of concrete is called as _____ .

(c) Select the correct option in any ***four*** of the following : *1×4=4*

(i) ($C_3S/C_2S/C_3A$) has more resistance to sulphate attacks.

(ii) (Vicat's/Le-Chatelier's/Briquette's) apparatus is used for determining the soundness of cement.

(iii) 75 mm slump denotes (Low/Medium/ Very low) workability of concrete.

(iv) Under normal circumstances (i.e. 20°C temp with ordinary cement) the stripping time for beam soffit formwork is (3/7/28) days.

(v) (Angular/Flaky/Rounded) aggregates provide better workability.

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

(i) Accelerator and Retarder admixtures

(ii) Flaky and Elongated aggregates

(iii) Rodding and Ramming of concrete

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

(i) Initial setting time of cement

(ii) Ferrocement

(iii) Yield of concrete

3. (a) Draw the flow diagram of dry process of manufacturing cement. Discuss the relative advantages of dry process over wet process. 7

(b) Discuss the factors responsible for causing unsoundness of cement. Describe the procedure of determining soundness of cement in laboratory. Give the neat sketch of apparatus. 7

4. (a) Discuss the 'Bulking phenomena' of fine aggregate. Explain the importance of bulking in batching. 7

(b) For the following observations of sieve analysis of 1 kg sand, determine the fineness modulus of the sand sample : 7

I.S. sieve size	4·75 mm	2·36 mm	1·18 mm	600 µm	300 µm	150 µm
Weight retained on sieve (gm)	40	120	160	210	320	150

Show the calculation in tbular form.

5. (a) Define workability of concrete mix. Discuss the effect of shape and size of aggregate on workability. 7

(b) Describe slump test for determining workability of concrete mix in laboratory. 7

6. (a) Describe the advantages and disadvantages of mechanical compaction of concrete. 7

(b) Discuss the requirements of a good formwork. 7

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

(a) Importance of water cement ratio in concrete

(b) Gunite

(c) Membrane curing

(d) Pumping of concrete

(e) Creep of concrete

(f) Vacuum concrete