B.Tech. Civil (Construction Management)

01715

Term-End Examination

June, 2010

ET-581(A) : TESTING FOR QUALITY CONTROL

Time : 3 hours   *Maximum Marks : 70*

Note :   *Attempt any five questions. All questions carry equal marks. Use of calculator is permitted.*

1. (a) Fill in the blanks in the following :   6x1½=9
   (i) For the determination of consistency of cement paste by Vicat's apparatus, the standard plunger should penetrate to _____ from the bottom of the mould.
   (ii) For determination of soundness of cement by Le–Chatelier method, cement is gauged with _____ times the water required for standard consistency.
   (iii) The percentage by weight of particles whose least dimension (thickness) is less than 0.60 times their mean dimension, is called as _____ index of aggregate.
   (iv) The minimum number of samples as per requirement of Quality Control shall be _____ if Quantity of concrete is more than 15 m^3 and less than 31 m^3.

(v) The aggregate impact value of coarse aggregate should not be more than _____ percent for concrete used for other than wearing surface.

(vi) The height of the mould for the slump test is _____ mm.

(b) Explain briefly *any two* of the following :
                                    2x2½=5

(i) Characteristic strength of concrete.

(ii) Chemical method test for determination of Alkali Aggregate Reactivity.

(iii) Importance of grading of aggregates in a concrete mix.

2. (a) Explain the consistency of standard cement paste. Describe the procedure to obtain normal consistency of a cement sample. Discuss the utility of this test.   1½+4+1½=7

(b) Describe the procedure to determine the Fineness by specific surface of a cement sample by Blaine Air Permeability method. Discuss the importance of this test also.   5+2

3. Differentiate between the following *(any four)* :
                                    4x3½=14

(a) Cube and cylindrical strength of concrete.

(b) Initial and final setting of cement.

(c) Cold immersion and boiling water tests of plywood.

(d) Parallel to grain and perpendicular to grain tests of timber.

(e) Identation and Rebound principles of determining surface hardness.

4. Describe the following (*any four*) :   4x3½=14
   (a) Aggregate Crushing Value
   (b) Estimation of Deleterious material and organic impurities in a aggregate sample.
   (c) Ultrasonic Pulse Velocity Test.
   (d) Permeability test for clay roofing tiles.
   (e) Cylinder splitting tension test.

5. (a) Discuss the factors affecting workability of a concrete mix.   4+3+7=14
   (b) List out various methods to determine workability of concrete mix.
   (c) Describe the Vee-bee Consistency Test to determine the workability of a concrete mix. Discuss limitation of this test.

6. (a) Give step by step procedure of Compression Test of Concrete.   7+3+4=14
   (b) Discuss the effect of height/diameter ratio on strength of concrete.
   (c) Discuss test for performance of an admixture in concrete mix.

7. Write short note on *any four* of the following :
   (a) Acceptance Criteria of Concrete.   4x3½=14
   (b) Alkali Aggregate Reactivity.
   (c) Determination of Corrosion of Reinforcement Bar.
   (d) Bulking of sand phenomena.
   (e) Segregation and bleeding of concrete.