

B.Tech. Civil (Construction Management)

Term-End Examination

00712

December, 2016

ET-581(A) : TESTING FOR QUALITY CONTROL

Time : 3 hours

Maximum Marks : 70

Note : *Question number 1 is compulsory. Attempt any four out of the remaining six questions. Answer should be brief and to the point.*

1. Fill in the blanks in the following : **7×2=14**

- (a) For underwater concreting _____ cement is used whereas for severe environmental exposure _____ cement is used.
- (b) The aggregate impact value should not be more than _____ % by weight for aggregate used for concrete other than wearing surface and _____ % for wearing surface.
- (c) The size of cube for testing compressive strength of cement is _____ whereas for concrete it is _____ .
- (d) In the formula $f_m = f_{ck} + 1.64 \sigma$, f_m is _____ and f_{ck} is _____ .

- (e) Crazing test is used for _____ whereas Glue Adhesion test is used for _____ .
- (f) The strength of concrete cube _____ (increases/decreases) with increase in rate of application of stress and it _____ (increases/decreases) with the increase in height/diameter ratio of specimen.
- (g) The percentage by weight of a particle in an aggregate sample whose least dimension (thickness) is less than three-fifth of their mean dimension is called as _____ index whereas whose greatest dimension is greater than 1.8 times their mean dimension is called as _____ index.
2. (a) Discuss the field tests of cement that are recommended for minor works. 5
- (b) Define the soundness of cement. Describe the 'Le Chatelier Method' for determining the same and discuss its limitations. 9
3. (a) Mention the sizes of the set of sieves as recommended by IS : 2386 for carrying out sieve analysis. What observations and results are reported in this test ? 5
- (b) Differentiate between shear slump and collapse slump. Describe the slump test and its limitations. Give a neat sketch (with dimensions) of the experimental set-up. 2+5+2

4. Describe the procedure of testing cylindrical concrete specimen for compressive strength of concrete. Answer must specifically include preparation of mould, curing, capping and testing, etc. Also comment on the cube strength v/s cylinder strength. 12+2
5. (a) Name any four non-destructive tests of concrete. Describe the Rebound Hammer test in detail. Discuss the advantages and limitations of this test. 2+5+3
- (b) How is the thickness of pavement determined using electrical methods ? 4
6. (a) Name the tests to be conducted for testing clay bricks. Describe the efflorescence test in detail. 2+6
- (b) Write a short note on the compression test of timber, i.e., parallel to grain and perpendicular to grain. 6
7. Write short notes on any *four* of the following :
- $4 \times 3 \frac{1}{2} = 14$
- (a) Visual Observation Tests for Timber
- (b) Indirect Tension Test of Concrete
- (c) Dispersion and Coefficient of Variation
- (d) Ring Tension Test of Concrete
- (e) Turbidity Test
- (f) Heat of Hydration