Diploma in Civil Engineering

Term-End Examination

December, 2007

BCE-036 : SOIL, ROADS AND AIRFIELDS

Time : 2 hours   *Maximum Marks : 70*

Note : *Attempt **five** questions in all. Question no. 1 is **compulsory**. Attempt any **four** questions from the remaining questions. Use of calculator is allowed. Graph papers may be supplied on request.*

1. Fill in the blanks :   *2×7=14*

   (i)   In grain size analysis of soils finer fraction is analysed by _____ or _____ method.

   (ii)   Degree of shrinkage is the change in _____ per unit original _____ .

   (iii) The soils transported by running water and deposited along the stream are called _____ soils.

   (iv) Top 0·5 m of embankment below subgrade level should have compaction _____ percent and other portions should have _____ percent.

   (v)   The P.I. of the material should not be more than _____ for surface treated WBM and not more than _____ for WBM.

(vi)   _____ cm of Asphaltic concrete can be considered equivalent to _____ cm of WBM.

(vii) The basic runway length is increased at a rate of _____ % per _____ m rise in elevation above MSL.

2. The natural moisture content of a soil is 36·5%. Consistency limit tests on the soil gave L.L. = 54·2%, Plastic limit as 21·2%. Calculate P.I. and L.I. of the soil.

7+7=14

3. Explain with neat sketch the Standard Proctor Test and also discuss the effects of moisture content on compaction.

9+5=14

4. (a)   Explain the functions of tricycle under-carriage.

(b)   Describe the important factors required to be considered for site selection of a new airport.   *7+7=14*

5. (a)   List the methods for achieving the desired compaction in field giving details of any one method.

(b)   How will you evaluate compaction ?   *7+7=14*

6. (a)   List out the properties of bituminous course.

(b)   Where is Dense Macadam used in India ? How does this differ from ordinary bituminous macadam ? *6+8=14*

7. (a)   Explain various Runway Elements with a neat sketch in plan and cross-section.   *4*

(b) Define the following : $2\times5=10$

    (i)   Liquid Limit

    (ii)   Airfield Reference Point

    (iii)   Shrinkage Ratio

    (iv)   Crash Barrier

    (v)   Porosity

8. Write short notes on any **four** of the following : $3\frac{1}{2}\times4=14$

(a) Hydrometer Analysis

(b) Shrinkage Limit

(c) Modified Proctor Test

(d) Highway Classification

(e) Noise Nuisance in Airport Site Selection

(f) Correction for Temperature in Basic Runway Length