

00322

Diploma in Civil Engineering

Term-End Examination

December, 2011

BCE-036 : SOIL, ROADS AND AIRFIELDS

Time : 2 hours

Maximum Marks : 70

Note : Attempt five questions in all. Question number 1 is compulsory. Use of scientific calculator is allowed. Graph papers may be supplied on request.

1. Fill in the blanks :

7x2=14

- (a) The water content of Soil, which represents the boundary between plastic state and liquid state is known as _____.
- (b) Coarse grained soils are best compacted by a _____.
- (c) In highway construction, rolling starts from _____.
- (d) For sandy soils the most common method of stabilization is _____.
- (e) As per ICAO recommendation, minimum width of safety area for instrumental runway should be _____.
- (f) The main advantage of angle nose out parking configuration of aircraft is that the _____.
- (g) The minimum width of clearway is _____.

2. A saturated soil with a volume of 22.00 cm^3 has a mass of 32 g. After drying, the soil had a volume of 13.9 cm^3 . If mass was 22 g. Determine the shrinkage limit and shrinkage ratio of the soil. 14
3. Explain with sketch, the effect of moisture content on compaction. Explain standard proctor test for compaction in the laboratory. 14
4. What are the considerations for selecting a highway alignment ? What are the special consideration for selecting an alignment of a highway in the hills ? What are the special considerations for selecting an alignment of a highway in a desert region ? 14
5. What factors govern the selection of soils for use in road embankment ? What are the requirements for compaction of road embankments ? Describe the construction techniques for bituminous road. 14
6. Explain the runway orientation procedure step wise based on wind Rose Diagram. Give neat diagram and assume your own wind data for 10 years. 14

7. Describe briefly the minimum turning radius, circling radius and jet blast characteristics of an aircraft. Explain the necessity of airport classification. 14

8. Define the following : 7x2=14

- (a) Consistency limits
 - (b) Evaluation of compaction
 - (c) General control on Horizontal Alignment
 - (d) Mastic Asphalt
 - (e) Apron
 - (f) Parts of an Aircraft.
 - (g) Noise Nuisance.
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