01362

Diploma in Civil Engineering

Term-End Examination

June, 2011

BCE-052 : TRANSPORTATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Question number 1 is* **compulsory.** *Attempt* **four** *more questions out of remaining questions.*

1. Select the correct alternative from the given four choices for each of the following questions. **1x14=14**

   (a) The main disadvantage of air transport is :

   (i) very high speed

   (ii) very good comfort

   (iii) less pollution

   (iv) very costly

   (b) The horizontal scale for preparation of a drawing for plain and rolling terrain may be taken as :

   (i) 1 in 100   (ii) 1 in 250

   (iii) 1 in 1000   (iv) 1 in 2500

   (c) Clay with liquid limit less than 35% is designated as :

   (i) GL   (ii) SL

   (iii) CL   (iv) ML

(d) The load distribution factor for a single lane of 3.75 m width is taken as

(i) 1.0   (ii) 1.5

(iii) 2.0   (iv) 2.5

(e) Which of the following joint is **not** provided in concrete pavements ?

(i) Transverse contraction joint

(ii) Longitudinal joint

(iii) Thermal joint

(iv) Expansion joint

(f) Percentage of camber provided for a thin bituminous surface is :

(i) 1.7 to 2.0   (ii) 2.0 to 2.5

(iii) 2.5 to 3.0   (iv) 3.0 to 4.0

(g) The ground improvement technique which is provided for the upward movement of water from the underlying saturated soil and drain it away is known as :

(i) Stone column   (ii) Sand drain

(iii) Grouting   (iv) Stabilisation

(h) The estimation of discharge of a stream for finding the waterway is given by $Q = K$ (Catchment Area)^n where n is :

(i) Zero   (ii) 1

(iii) 3/4   (iv) None

(i) Which of the following is **not** the function of ballast :

    (i) to hold the rails to correct gauge

    (ii) to act as an elastic bed to absorb the impact of wheels.

    (iii) to act as good drainage media

    (iv) to check growth of vegetation under the track.

(j) Howrah Station in Kolkata is an example of a :

    (i) Junction station

    (ii) Wayside station

    (iii) Terminal station

    (iv) None of the above.

(k) Which of the following is an aircraft characteristic ?

    (i) Height of flight

    (ii) Amount of fuel and its quality

    (iii) Speed

    (iv) None of the above

(l) Which of the following is **not** a types of deck ?

    (i) Wet deck

    (ii) Dry deck

    (iii) Floating dry deck

    (iv) None of the above.

(m) A metro Rail system is also known as :

    (i)   Light rail transit

    (ii) Rapid rail transit

    (iii) HCB system

    (iv) None of the above.

(n) If two aggregates A and B, have crushing value 40 % and 35 % respectively the quality of :

    (i)   A is better than B

    (ii) B is better than A

    (iii) both are of same quality

    (iv) nothing can be said.

2. (a) Give a brief account of India's transportation system.   7

   (b) Discuss factors affecting geometric design of roads.   7

3. (a) What is a horizontal curve ? Calculate the radius of a horizontal curve for a design speed of 80 km/hr and superelevation of 0.07.   7

   (b) Explain softening point test.   7

4. (a) Explain briefly, the design procedure of flexible pavement using CBR value.   7

   (b) Explain subsurface drainage for lowering the water table, with a neat sketch.   7

5. (a) What are the various types of culvert ? 7
Explain any one in brief.

(b) What are the functions of sleepers in a 7
railway track ?

6. Write short notes on *any four* : 4x3½=14

(a) Aircraft characteristics.

(b) Maintenance of airport pavement

(c) Types of rail section

(d) Importance of urban transportation system

(e) Sight distance

(f) Marshall test.