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BCE-052

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Diploma in Civil Engineering
DCLE (G)

Term-End Examination

June, 2013

BCE-052 : TRANSPORTATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *All questions carry equal marks.*
Question number ***1*** *is* ***compulsory.*** *Attempt* ***any four*** *questions out of the remaining questions.*

1. (a) Choose the most appropriate answer. **1x7=7**

(i) Indian road network is 3.3×10^6km, the _____ largest in the world.

(A) First (B) Second

(C) Third (D) Fourth

(ii) The passenger car unit factor for three _____ wheelers is.

(A) 0.25 (B) 0.50

(C) 0.75 (D) 1.0

(iii) The rate of superelevation for maximum comfort condition is :

(A) 5% (B) 7%

(C) 9% (D) 12%

(iv) In a subgrade the soil is clay with liquid limit 40%. This will be designated as clay with _____ plasticity.

(A) Low (B) Intermediate

(C) High (D) None

(v) The maximum allowable stripping value for the aggregate is :

(A) 25% (B) 50%

(C) 75% (D) 100%

(vi) For a highway the mix grade of concrete for the rigid pavement is of :

(A) M-20 (B) M-30

(C) M-40 (D) M-50

(vii) Railway ballast is :

(A) the layer of broken stone provided on the formation.

(B) a concrete mix layer below the sleeper.

(C) a bituminous layer on the formation.

(D) None of the above

(b) Differentiate between the following in each case :

(i) Contraction joints and Expansion joints in concrete pavement — 3½

(ii) Flyovers and underpass — 3½

2. (a) Explain penetration test related to bitumen. — 7

(b) Discuss a method of construction of roads in a marshy land. — 7

3. (a) What is superelevation ? Determine the radius of horizontal curve for a design speed of 80 km/hr and super elevation of 0.07. Assume coefficient of lateral friction suitably. — 7

(b) Discuss the maintenance of concrete road with neat sketches. — 7

4. (a) With neat sketches explain various parts of a well foundation. — 7

(b) For a river with alluvial bed and having discharge 1000 m^3/sec, determine the depth of foundation. The mean diameter of the particles in mm is 5. — 7

5. (a) Discuss functions of ballast and sleepers in a railway track. 7

(b) Give a neat sketch of a left hand turnout. Explain the various components used in it. 7

6. (a) Discuss the planning procedure of a new airport. 7

(b) What is the function of a break water ? Explain atleast **three** types of break water with neat sketches. 7

7. Write short notes on ***any four*** of the following : **3½x4=14**

(a) Urban transport system

(b) Transit sheds and warehouses

(c) Sight distance

(d) Planning of railway stations

(e) Fixation of waterway

(f) Quality control of concrete roads.