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**Diploma in Civil Engineering
DCLE (G)**

Term-End Examination

December, 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 : $1 \times 7 = 7$

(i) In Lucknow plan the length of national highway (km) is estimated as area in km^2 divided by _____

(A) 100 (B) 75

(C) 50 (D) 25

(ii) The pavement width for two lane traffic is equal to :

(A) 3.75m (B) 5.5m

(C) 7.0m (D) 10.5m.

- (iii) The stopping sight distance is estimated for following time/times :
- (A) perception time
 - (B) brake reaction time
 - (C) both (A) and (B)
 - (D) both (A), (B) and overtaking time

- (iv) Match the followings :

	Soil type		CBR value
(1)	Expansive soil	(a)	15
(2)	Dune sand	(b)	7
(3)	Murram	(c)	2

(1) (2) (3)

- (A) (a) (b) (c)
 - (B) (c) (a) (b)
 - (C) (b) (a) (c)
 - (D) (c) (b) (a)
- (v) Penetration test on bitumen is used for the determination of its :
- (A) grade
 - (B) viscosity
 - (C) ductility
 - (D) temperature susceptibility
- (vi) The most common gauge used by Indian railway is :
- (A) Broad gauge of 1.676m
 - (B) Metre gauge of 1.000m
 - (C) Narrow gauge of 0.762m
 - (D) None of the above.

(vii) An artificial structure constructed in the sea to protect ships from the effect of waves and storms is called as :

- (A) harbour (B) breakwater
(C) docks (D) setties

(b) Write the expression for radius of a horizontal curve for the comfort condition. Determine the value of radius of horizontal curve for a national highway. **7**

2. (a) Explain aggregate impact test conducted for aggregates. **7**

(b) Explain different types of joint in concrete pavements. **7**

3. How the requirements for the maintenance of a road are evaluated ? Explain the role of a bump integrator. **14**

4. (a) Discuss guidelines for the site selection of a bridge across a river. **7**

(b) Explain following structures with respect to hill roads : **7**

(i) Retaining wall

(ii) Breast walls.

5. (a) How the alignment of a railway line is selected ? Explain the degree of curve and cant. 7
- (b) What are the various activities covered in the maintenance operations of a railway track ? 7
6. (a) Write a note on passengers terminal building in a civil airport. 7
- (b) Discuss various parts of a harbour. Define each term used. 7
7. Write short notes on *any four* : $3\frac{1}{2} \times 4 = 14$
- (a) Advantages and disadvantages of water transport
- (b) Aircraft characteristics
- (c) Marshalling yard
- (d) Causeway
- (e) Vertical sand drains in marshy land
- (f) Points and crossings
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