

**DIPLOMA IN CIVIL ENGINEERING
DCLE(G)**

Term-End Examination

December, 2016

BCE-052 : TRANSPORTATION ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Attempt any five questions. Give well-labelled, neat sketches.

1. (a) Give a typical section of a hilly road — partly in cutting and partly in filling. 6
- (b) Define the following (giving sketches) : 5
 - (i) Carriageway
 - (ii) Permanent land width
 - (iii) Camber in roads
- (c) Differentiate between urban and non-urban roads. 3

2. (a) Define the following terms : 3
 - (i) Intensity of traffic
 - (ii) Volume of traffic
 - (iii) Impact load on pavements

- (b) What is segregation of traffic ? Why is it necessary and at which places ? 4
- (c) Give the advantages and disadvantages of flexible and rigid pavements. 7
3. (a) Discuss the following in brief : 8
- (i) Different gauges as used in Indian Railways. What is the unigauge programme ? Give its advantages.
 - (ii) Provision of foot-paths, kerbs, drains, and km-stones in roads.
 - (iii) Use and function of ballast, sleepers, and fish plates on railway tracks.
 - (iv) Types of railway crossings at railway stations.
- (b) (i) What are the advantages of water transport ? Where is it feasible ?
- (ii) Discuss the reasons for the use of rigid pavements for taxiways and aprons.
 - (iii) Explain the construction of light duty concrete pavements. 6

4. (a) What do you understand by compaction and consolidation of soil in road construction ? 4
- (b) Discuss the factors influencing the compaction of soil. 4
- (c) Explain how you can control the density of soil (used in roads) while in the field. 6
5. (a) A certain area is prone to long periods of waterlogging. Propose the most suitable cross-section for such a road, giving all details. 5
- (b) Give the methods available for its construction. 3
- (c) Give the equation that you would use to find the required waterway to be provided, while constructing a bridge over an alluvial river. Explain all the terms of this equation. How will you find the required depth of foundation for the bridge pier ? 6
6. (a) Give the plan and description of a good passenger terminal building at any modern airport. How does it meet the requirements ? Explain. 7
- (b) Discuss the upkeep of an airport, especially in Indian conditions of dust storm, and monsoon fury. 7

7. Write short notes on any *two* of the following: 2×7=14

- (a) Use of locks in a navigation system
 - (b) Layout of a harbour
 - (c) Use of sheep-foot roller in road construction
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