

Total No. of Questions : 5 ] [ Total No. of Printed Pages : 3

Roll No. ....

## CE-404(O)

**B. E. (Fourth Semester) EXAMINATION, Dec., 2009**

**(Old Scheme)**

**(Civil Engg. Branch)**

**TRANSPORTATION ENGINEERING – I**

**[CE – 404(O)]**

*Time : Three Hours*

*Maximum Marks : 100*

*Minimum Pass Marks : 35*

**Note :** Attempt all questions. All questions carry equal marks.  
Assume suitable data wherever necessary.

1. (a) Explain what do you mean by buckling of rails ? Why and how buckling occurs ? 10
- (b) Discuss the factors on which sleeper density depends. How the sleeper density is expressed ? 10

*Or*

Write short notes on any *four* of the following : 20

- (i) Selection of ballast materials
- (ii) Rail creep
- (iii) Check and guard rails
- (iv) Hauling capacity
- (v) Plate laying

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2. (a) What are the various systems of controlling the movement of trains ? Explain one system which has been used on Indian Railways. 10

- (b) Write short notes on the following : 10
- (i) Cant deficiency
  - (ii) Marshalling yard

Or

- (a) Find out the angle of switch and theoretical length of the switch from the following data of a switch : 10

- (i) Thickness at the toe of tongue rail = 6.30 mm
- (ii) Heel divergence = 13.3 cm
- (iii) Actual length of tongue rail = 6.40 m

- (b) Write short notes on the following : 10
- (i) Superelevation
  - (ii) Station yards

3. (a) Explain the following terms : 10
- (i) Selection of site for bridge
  - (ii) Afflux
- (b) What are the various types of foundations in railway bridges ? 10

Or

- (a) Write short notes on the following : 10
- (i) Collection of bridge design data
  - (ii) Wing walls
- (b) What type of loads are to be taken into consideration in design of railway bridge ? 10

4. (a) Write short notes on the following : 10
- (i) Cofferdams
  - (ii) Strengthening of bridges

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- (b) What are the various methods of erecting of steel bridges ? 10

*Or*

- (a) Explain the following terms : 10
- (i) Sinking of wells
  - (ii) Pile foundation
- (b) What are the various equipments used in the construction of bridges ? 10
5. (a) Briefly explain the engineering surveys needed for the selection of route of tunnels. 10
- (b) What are the different mucking operations in tunnels ? 10

*Or*

- (a) Write short notes on the following : 10
- (i) Methods of lining
  - (ii) Drainage and ventilation
- (b) What are the various requirements of an ideal tunnel alignment ? 10