

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION  
MARCH 2013**

**CE 04 605—TRANSPORTATION ENGINEERING  
(2004 Scheme)**

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.  
Assume any missing data.*

**Part A**

1. (a) What is track capacity ? Suggest some measures for increasing capacity.
- (b) What are the different gradients provided in Indian Railways ? What are their permissible values ?
- (c) Discuss the methods of tunneling in soft rocks.
- (d) What is interlocking ? Why is it required ?
- (e) What are the factors considered for selection of site for a harbour ?
- (f) Distinguish between Transit sheds and Warehouses.
- (g) What is the principle of ITS ?
- (h) What is the necessity of intermodal co-ordination ?

(8 × 5 = 40 marks)

**Part B**

2. (a) How wear on rails are classified ? Explain. (6 marks)
- (b) A 9° curve diverges from a 6° curve in an opposite direction in the layout of a BG yard. Compute the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 50 kmph. Assume cant deficiency of 76 mm. (9 marks)

*Or*

- (c) What are the requirements of an ideal rail joint ? (7 marks)
- (d) What is superelevation ? Derive the equation to find the superelevation of railway track. (8 marks)
3. (a) What are the steps involved in the maintenance of a railway track ? (8 marks)
- (b) Differentiate between Semaphore signal and Warner signal. (7 marks)

*Or*

- (c) Determine all the elements of a BG turnout when the following data are provided :—

Heel divergence 12.70 cm.

Angle of switch 1° 35' 22"

Cross number 8.5.

(8 marks)

- (d) Discuss on the various crossings in railway track. (7 marks)

**Turn over**

4. (a) What are breakwaters ? Explain with neat sketches the different types of breakwaters and their functions. (8 marks)
- (b) Explain the functioning of a dry dock. (7 marks)
- Or*
- (c) What are the factors to be considered in the design of a harbour ? (7 marks)
- (d) What are the functions of fenders and dolphins ? How are they classified ? (8 marks)
5. (a) Explain the steps involved to calculate Annual Highway Cost. (7 marks)
- (b) Discuss the various studies involved in planning surveys. (8 marks)
- Or*
- (c) What are smart highways ? Explain the concept. (7 marks)
- (d) Compare the Nagpur Road Plan and Bombay Road Plan. (8 marks)

[4 × 15 = 60 marks]