SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2012

CE 04 605—TRANSPORTATION ENGINEERING

Time : Three Hours　　　　　　　　　　　　　　　　　　Maximum : 100 Marks

Answer all questions.
Assume any missing data.

Part A

I. (a) What are the requirements of a permanent way ?

(b) What is meant by tilting of rails ? Why is it required ?

(c) Discuss the methods of tunnelling in hard rocks with neat sketches.

(d) Sketch a left hand turnout and mark the various components.

(e) What are the factors considered for selection of site for a harbour?

(f) Distinguish between fenders and dolphins.

(g) What is an automated highway ?

(h) What are the studies to be conducted in planning surveys ?

$(8 \times 5 = 40$ marks)

Part B

II. (a) Define creep in railways. What are its causes and how is it measured ?　　(8 marks)

(b) Discuss the suitability of using different types of sleepers.　　(7 marks)

Or

(c) What are the requirements of an ideal rail ? How far does the flat footed rail satisfy these requirements ?

(8 marks)

(d) What is grade compensation ?

While aligning a QCi track with a ruling gradient of 1 in 250, a horizontal curve of radius 350 m is encountered. Find the compensated gradient at the curve.

(7 marks)

III. (a) How are signals classified based on their function ?　　(7 marks)

(b) What are the functions and requirements of a railway station ? Explain the features of a single line wayside railway station.

(8 marks)

Or

Turn over

(c) A 5° curve diverges from a 3° main curve in reverse direction in the layout of a BG yard. If the speed on the branch line is restricted to 36 kmph, determine the speed on the main line.

(8 marks)

(d) What are the objectives of signalling in railways ? Explain the automatic train control system for controlling train movements.

(7 marks)

IV. (a) How are harbours classified ? What are their requirements ?   (7 marks)

(b) With sketches briefly explain the navigational aids provided near harbours.   (8 marks)

Or

(c) Draw the sketch of an artificial harbour and explain the components.   (7 marks)

(d) What are the functions of dry dock ? Explain the working principle of a floating dry dock.

(8 marks)

V. (a) What is intermodal coordination ? What are the requirements for providing intermodal coordination ?

(7 marks)

(b) Explain the application of ITS in incident management.   (8 marks)

Or

(c) What are the salient features of the Nagpur Road Plan ?   (8 marks)

(d) What are the factors on which the vehicle operation cost depend ?   (7 marks)

[4 × 15 = 60 marks]