C 26760 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION MAY 2012

CE 09 605—TRANSPORTATION ENGINEERING—II

(2009 Admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. What is a permanent way ?
2. Define creep with reference to railway track.
3. What is a track junction ?
4. What is a dolphin ?
5. What is the importance of tunnel ventilation ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Describe coning of wheels.
7. Draw sketches of any two track junctions.
8. What is the difference between beacon and lighthouse ?
9. What is a dry dock ?
10. How is a tunnel constructed using pilot tunnel method ?
11. What are the techniques used for tunnel lining ?

(4 × 5 = 20 marks)

Part C

Answer **all** *questions.*

12. (a) (i) What is meant by grade compensation ? (3 marks)

(ii) Calculate the grade compensation if the grade resistance together with curve resistance shall be equal to the resistance offered by ruling gradient of 1 in 200 on a 4° curve.

(7 marks)

Or

(b) (i) Explain the concept of negative super elevation. (3 marks)

(ii) A 8 degree curve branches off from a 4° curve on a broad gauge track. If the speed on the main line is restricted to 45 kmph, determine the restricted speed on branch line. Permissible cant deficiency is 76 mm.

(7 marks)

Turn over

13. (a) (i) With a neat sketch explain the various components of a left hand turn–out. (3 marks)

(ii) Calculate the design elements of a left hand turn–out with 1 in 12 crossing on a broad gauge track for the following data. Heel divergence = 11 cm. The curve starts at a point before the toe of the switch and end at T.N.C.

(7 marks)

Or

(b) (i) What are the objectives of superelevation ? (3 marks)

(ii) Calculate the super elevation for a broad gauge track of radius 210 m, if the maximum permissible speed is 80 kmph. What should be the reduction in speed if the radius is restricted to 100 m ?

(7 marks)

14. (a) (i) Draw the lay–out of a large artificial harbour, and label the components. (3 marks)

(ii) What are the effects of tides and waves on harbour design ? Explain. (7 marks)

Or

(b) (i) What is a breakwater ? Enumerate various types of breakwaters. (3 marks)

(ii) What is meant by

(1) slipway.

(2) marine railway ? (7 marks)

15. (a) Describe the techniques used for construction of tunnels in hard rock. (10 marks)

Or

(b) (i) How is the alignment of a tunnel fixed ? (3 marks)

(ii) Describe any *two* techniques for construction of tunnel in soft soil. (7 marks)

[4 × 10 = 40 marks]