B. Tech.
(SEM. VII) (ODD SEM.) (REG.) EXAMINATION, 2012-13
TRANSPORTATION ENGINEERING : II

Time : 3 Hours]  [Total Marks : 100

Note:  (1) Attempt all questions.
       (2) All questions carry equal marks.

1. Attempt any four of the following:
   (a) Explain three types of rail gauges common in India, what is the difference between them?
   (b) What are the requirements of a good permanent way? List and explain briefly.
   (c) Explain the Administrative set up of Indian railways.
   (d) What is coning of wheels? Explain its use.
   (e) Sketch a precast sleeper followed in the Indian railways and explain its detail.
   (f) What is the function of ballast in a railway track? Explain how it distributes the load to the earth.

2. Attempt any four of the following:
   (a) Explain the different type of resistance to traction and difference them.
   (b) What is hauling capacity of a locomotive?
(c) Determine the gradient of a B.G track such that the grade resistance together with curve resistance due to a curve of 2 degrees shall be equal to the resistance due to a ruling gradient of 1 in 200.

(d) The wheel base of a vehicle moving on a B.G track is 6100 mm and the diameter of the wheel is 1524 mm the depth of the flanges below the top of the rail is 32 mm. Find the extra width to be provided on the gauge if the radius of the curve is 170 meters.

(e) Differentiate between negative cant and equilibrium cant.

(f) Why fish plates are provided on the railway track sketch a joint of fish plate with rails.

3 Attempt any two of the following:

(a) Calculate the super elevation and maximum permissible speed and transition length of a 3 degree curve on a high speed B.G track with the following data:
   Max sanctioned speed = 130 km/hr
   Equilibrium speed = 85 km/hr
   Booked speed of good train = 50 km/hr

(b) What is the Scissor crossing? Explain with the help of a diagram where it is used.

(c) Explain the classification of the signals used in Indian railways with their functions.

4 Attempt any two of the following:

(a) Explain with the help of a figure the geometric design of a runway and taxiway.

(b) How the apron is designed and explains its layout.

(c) What is instrument landing system explain its utility.
Attempt any two of the following:

(a) Explain the development of air transport in India and the national and international organization involved in Air transport.

(b) List and explain the requirement for the Selection of site for an airport.

(c) How is the orientation of a runway decided? List and explain the factor involved in it.