Total number of printed pages – 2

B. Tech
PECI 5304

Sixth Semester Back Examination – 2015
TRANSPORTATION ENGINEERING - II
BRANCH : CIVIL
QUESTION CODE : M 371
Full Marks – 70
Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.
The figures in the right-hand margin indicate marks.

1. Answer the following questions :   2×10

   (a) What are the advantages of coning of wheels ?

   (b) What are the causes of formation of kinks in rails ?

   (c) What are the different gauges used in India with their dimensions ?

   (d) Find out the curve resistance, when a curve of 6 degrees is situated on a B.G. line and a train with total weight of 1219.8 tonnes is moving over it.

   (e) What do you understand by cant deficiency ?

   (f) What do you mean by 'Heel clearance' of a switch ?

   (g) What is the significance of Wind Rose Diagram ?

   (h) What is Minimum Turning Radius ?

   (i) Why exit taxiways are provided in the airport ?

   (j) Name the different characteristics of aircrafts.

2. What do you understand by a permanent way ? Mention the requirements of an ideal permanent way. Draw a typical cross section of a permanent way. Discuss in brief the basic functions of various components of a railway track. Why the uniformity of gauges is desirable in any country ?   10

3. What are the objects of providing transition curves on railways ? Explain as to how the length of a transition curve is decided. Determine the length of transition curve for a M.G. curve of 4°, having a cant of 8 cm. The maximum permissible speed on curve is 60 Km/h.   10

P.T.O.

4. (a) What is meant by wear of rails? How do you classify the wear ? Discuss the various causes of wear. 5

   (b) What is the ballast in permanent way ? Mention the functions of ballast and state the requirements of a good ballast material. 5

5. (a) Draw a neat diagram of simple right-hand turnout and show its various component parts. Explain the working principles of the turnout. 5

   (b) Calculate all the elements required to set out a 1 in 8 1/2 turnout, taking off from a straight B.G. track with its curve starting from the toe of the switch, i.e. tangential to the gauge face of the outer main rail and passes through T.N.C., given that the heel divergence as 11.4 cm. 5

6. (a) What are imaginary surfaces and their significance ? Explain with the help of neat sketches the take-off climb surfaces of an airport. 5

   (b) The runway length required for landing at sea level in atmospheric condition is 3000 m. Runway length required for take-off at a level site at sea level in standard atmospheric conditions is 2500 m. Aerodrome reference temperature is 24°C and that of the standard at aerodrome elevation of 150 m is 14.025°C. If the effective gradient is 0.5%, determine the runway length to be provided. 5

7. (a) Explain the various factors which affect the layout of taxiway. Summarize briefly the various taxiway geometrics as recommended by ICAO. 5

   (b) Explain the various surveys to be conducted and the data to be collected for airport site selection. 5

8. Write short notes any **two** of the following : 5×2

   (a) Hogged Rails

   (b) Engineering principles of signaling

   (c) Zoning Laws and Clear Zones

   (d) Separation Clearance of Taxiways.