

MODEL QUESTION PAPER

Fifth Semester B.Tech Degree Examination

13.505 Transportation Engineering I

Answer all questions

Time :3hrs

Max Marks:100

Part A

(Answer all questions)

1. (a) What is meant by coning of wheels? Why it is required?
(b) What are the functions of sleepers? What are its requirements?
(c) Enumerate various resistances that a moving train has to overcome.
(d) Sketch a left hand turnout and mark the various components.
(e) Distinguish between wet docks and dry docks? What are its functions?
(5x4 =20 marks)

Part B

(Answer any one full question from each module)

Module I

2. (a) Define creep in railways? What are its causes and how it is measured?
(10 marks)
(b) Describe the suitability of various materials that can be used as ballast in a railway track.
(10 marks)

OR

3. (a) Explain the factors to be considered for the selection of good railway track alignment.
(10 marks)
(b) Explain the major defects in rails and its remedial measures. (10 marks)

Module II

4. (a) Write short notes on transition curves, super elevation, cant deficiency (10 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 50kmph. Assume cant deficiency of 76mm. (10 marks)

OR

5 (a) Explain resistance due to gradient? A train with a total weight of 1178 tonnes is made to ascend a slope of 1 in 250. Find out the resistance due to slope experienced by the train in ascending the slope. (10 marks)

(b) explain various types of train resistances and work out an expression for total train resistance. (10marks)

Module III

6. (a) With the aid of sketches explain the different types of track junctions. Discuss their suitability under different conditions. (10marks)

(b) What are the functions and requirements of a railway station? Explain the features of a single line wayside railway station. (10marks)

OR

7.(a) Calculate all the elements required to set out a 1 in 8 turnout taking off from a straight BG track with its curve starting from the toe of switch and passes through the theoretical nose of crossing. Heel divergence is 12.6cm. (10marks)

(b) What are the objectives of signalling in railways? Explain the automatic train control system for controlling train movements. (10marks)

Module IV

8. (a) What are breakwaters? Explain with neat sketches the different types of breakwaters and their functions. (10marks)

(b) With sketches briefly explain the navigational aids provided near harbours. (10marks)

OR

9. (a) Draw the sketch of an artificial harbour and explain the components. (10marks)

(b) What is meant by dredging? Explain the working and suitability of any one type of dredger. (10marks)