CBCS Scheme

USN | | | | | | | | | | 15CT54

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Transportation Engineering

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Compare the characteristics of major modes of transportation. **(06 Marks)**

b. List the Jayakar Committee recommendations and explain their implementation. **(06 Marks)**

c. Write a note on roads classification. **(04 Marks)**

OR

2 a. Indicate the procedure of phasing road development work using saturation system. **(06 Marks)**

b. The area of a district is 13400 sq.km with 12 towns as per 1981 census. Determine the length of different categories of roads to be provided in this district by the year 2001. **(06 Marks)**

c. Write a brief note on PMGSY. **(04 Marks)**

Module-2

3 a. Explain the various factors affecting highway alignment. **(08 Marks)**

b. Calculate the overtaking sight distance for a design speed of 100 kmph making suitable assumptions. Compare OSD for two way and one way traffic. **(08 Marks)**

OR

4 a. What are the objectives of providing camber? What are its general shapes? Indicate the IRC specifications of camber for different road surfaces. **(08 Marks)**

b. An ascending gradient of 2% meets a descending gradient of 1.25%. Determine the length of Summit curve so as to provide intermediate sight distance for a design speed of 80 kmph. Assume all other data suitably as per IRC. **(08 Marks)**

Module-3

5 a. List the requirements of an ideal permanent way. **(08 Marks)**

b. Draw neat sketches of the following indicating the various parts:
i) Cross section of a single line B.G. track on embankment.
ii) Cross section of double line B.G. track in cutting. **(08 Marks)**

OR

6 a. What are the advantages of coning of wheels? Describe the theory of coning. **(08 Marks)**

b. Briefly describe the theories of creep. **(08 Marks)**

Module-4

7 a. List the various requirements of sleepers. **(08 Marks)**

b. Calculate the maximum train load that can be pulled by a locomotive having four pairs of driving wheels carrying an axle load of 24 tonnes each. The train has to run at a speed of 80 kmph on a straight level B.G track. What will be the reduction in speed if train has to climb a gradient of 1 in 200? If train climbs the gradient with 2° curve, what will be the reduction in speed? **(08 Marks)**

OR

8 a. Explain the different types of gradients in railways. What is gradient compensation? **(08 Marks)**

b. A 5° curve diverges from a 3° main curve in reverse direction in the layout of a B.G yard. If the speed on branch line is restricted to 35 kmph, determine the restricted speed on main line. **(08 Marks)**

Module-5

9 a. Draw a neat sketch of left hand turnout indicating all its components. **(08 Marks)**

b. Calculate all the necessary elements required to set out a 1 in 8½ turnout taking off from a straight B.G track with its curve starting from the toe of the switch ie tangential to the gauge face of the outer main rail and passes through theoretical nose of crossing ie TNC. Given, heel divergence = 11.4 cm. **(08 Marks)**

OR

10 a. With a neat sketch, describe a Marshalling yard. List the important factors considered for efficient functioning of a Marshalling yard. **(08 Marks)**

b. With sketches, describe the working principle of absolute and automatic block system. **(08 Marks)**

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