Registration No: | 0 | 8 | 0 | 7 | 2 | 2 | 8 | 0 | 4 | 2 |

Total Number of Pages: 2

B.Tech.
PCCI4302

Fifth Semester Examination – 2011

TRANSPORTATION ENGINEERING - I

Time: 3 Hours

Max. Marks: 70

Answer Question No. 1 which is compulsory and any five from the rest.

Each part of question No. 1 carries 2 marks. For remaining questions, each part of a question carries 5 marks.

Assume / take suitable / appropriate data if required.

1. (a) Draw the cross section of a road pavement proposed by Thomas Telford and Mc Adam in the initial road development stage.

   (b) What are the ideal requirements of a highway alignment?

   (c) Which shape is commonly provided in a road camber in India?

   (d) Bring out the points of difference between cutback bitumen and bitumen emulsion.

   (e) What tests are normally conducted for bituminous mix in case of the same material being used in a bituminous concrete layer?

   (f) Differentiate between spot speed and journey speed.

   (g) Suggest methods to prevent rise of ground water to the subgrade of a pavement.

   (h) Enumerate the inputs required for design of a rigid pavement as per IRC method.

   (i) What are the factors on which the economic span of a bridge depends?

   (j) Draw a schematic diagram of superstructure of a cable stayed bridge.

2. (a) Give a brief account of relative advantages and disadvantages of various modes of transportation.

   (b) Give the salient features of the present road development plans operational in our country.

3. (a) Explain the ground survey techniques used for an improvement project of an existing road.

   (b) Calculate the length of a sag curve which is formed by a gradient -2.0% followed by a gradient +2.5%. Take design speed as 80 kmph and stopping sight distance as 150m.

4. (a) A snow bound hilly terrain covers a highway which is on a horizontal curve having radius of 50m and has a normal design speed of 40 kmph. Calculate the superelevation to be provided and check the provision of the same.

   (b) What do you mean by design speed? Explain how this can be estimated for a given National Highway?

5. (a) Discuss the desirable properties of bitumen as a road construction material in a hilly terrain where winter temperature is below freezing point.

(b) Explain the different tests used normally for sub-base course.

6. (a) Give a list of distresses in form of cracking in a bituminous surfacing, their probable causes and suggested remedial measures.

(b) What is a collision diagram? How is it used?

7. (a) Highlight the steps involved in design of a flexible pavement as per IRC method.

(b) Give an account of data to be collected for selection of site for construction of a new bridge across a river.

8. (a) Describe the procedure of construction of a wet mix macadam layer of a pavement.

(b) Under which circumstances are pneumatic caissons preferred? Explain the precautions to be taken in such works.