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10CV56

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022
Transportation Engineering – I

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. Discuss briefly the role of transportation in the development of a country. (06 Marks)
b. What are the recommendations and implementation of Jayakar committee? (08 Marks)
c. What are the characteristics of road transport? (06 Marks)

- 2 a. What is saturation system of road planning? How it is used to decide the best proposal among difference alternatives. (06 Marks)
b. Determine the length of different categories of roads in a state in India for the year 2001 using the following data :
Area of the state = 1.80,000km², Total number of towns as per 1981 census = 175. (08 Marks)
c. Write a short notes on : (06 Marks)
i) PMGSY ii) KSHIP.

- 3 a. Briefly explain the requirements of ideal alignment. (06 Marks)
b. Define SSD? Explain the factors affecting SSD. (06 Marks)
c. A speed of overtaking and overtaken verticals are 70kmph and 40kmph respectively on a two way traffic road. If the acceleration of overtaking vehicle is 0.99 m/sec². (08 Marks)
i) Calculate safe overtaking right distance
ii) Mention the minimum length of overtaking zone
iii) Draw a neat sketch of overtaking zone and show the positions of sign posts.

- 4 a. List the objectives of providing extra widening of pavement at horizontal curves and super elevation. (06 Marks)
b. What is gradient? What are the different types of gradients? Explain in brief. (06 Marks)
c. An ascending gradient of 1 in 100 meets a descending gradient of 1 in 20. A summit curve is to be designed for a speed of 80kmph so as to have a overtaking sight distance of 470m. (08 Marks)

PART – B

- 5 a. Briefly explain the desirable properties of subgrade soil. (06 Marks)
b. Briefly explain, how CBR value of given soil is determined. (06 Marks)
c. Explain briefly the desirable, properties of road aggregate. Mention the laboratory tests conducted to determine the property. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.



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- 6 a. Compare rigid pavement with flexible pavement. (04 Marks)
b. What is ESWL? Explain in brief how ESWL is determined for a due wheel assembly. (08 Marks)
c. What are the factors to be consider in design of flexible or rigid pavements. Explain in brief. (08 Marks)
- 7 a. Explain the construction steps for cement concrete roads. (08 Marks)
b. Explain the construction steps of
i) Water bound macadam
ii) Dense bituminous macadam. (12 Marks)
- 8 a. Explain briefly BOT and BOOT. (06 Marks)
b. What are the highway user benefits? Explain in brief. (06 Marks)
c. Write short notes on :
i) Annual cost method
ii) Benefit cost ratio method. (08 Marks)

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