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21CV52

Fifth Semester B.E. Degree Examination, June/July 2024

Transportation Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.**Module-1**

- 1 a. How roads are classified according to Nagpur Road Plan explain functions of each category of road. (10 Marks)
- b. Explain basic requirements of an idea alignment and explain the various factors controlling the Highway alignment. (10 Marks)

OR

- 2 a. What are the different modes of transportation? Explain briefly. (05 Marks)
- b. Explain different road patterns with sketch. (05 Marks)
- c. The area at a certain district in India is 14000km² and there are 10 towns as per 1981 census. Determine the length of different categories of roads to be provided in this district by year 2001. (10 Marks)

Module-2

- 3 a. Sketch the component layers of flexible pavement. Explain the function of each component layer. (10 Marks)
- b. Determine the height of crown for a MDR of width 3.8m with WBM pavement. The rainfall is light in that area. (05 Marks)
- c. Explain PIEV theory with sketch. (05 Marks)

OR

- 4 a. Design rate of super elevation for 100 kmph speed having 500m radius. (05 Marks)
- b. Calculate safe stopping sight distance for 50kmph speed. Assume remaining data as per IRC specification. (05 Marks)
- c. Explain the procedure of finding Equivalent Single Wheel Load (ESWL) by graphical method. (10 Marks)

Module-3

- 5 a. Explain the procedure of finding crushing value and impact value of aggregates. (10 Marks)
- b. The load penetration values of CBR test conducted on specimen of soil are given below. Determine CBR value of soil if 100 division = 190kg.

Penetration of plunger (mm)	0.0	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0	7.5	10	12.5
Load readings (division)	0	8	15	23	29	34	37	43	48	57	63	67

(10 Marks)

OR

- 6 a. Calculate the group index of a sample of soil with the following data :
 i) Percentage passing in 75 micron sieve = 60
 ii) Liquid limit = 30 plasticity index = 12. (10 Marks)
 b. Describe procedure of finding penetration value of Bitumen sample and softening point of bitumen sample. (10 Marks)

Module-4

- 7 a. Elaborate BOOT concept. (05 Marks)
 b. Discuss importance of highway drainage. (05 Marks)
 c. List and explain the highway user benefits. (10 Marks)

OR

- 8 a. Differentiate and explain surface and sub-surface drainage system. (10 Marks)
 b. List and explain different methods of highway economic analysis. (10 Marks)

Module-5

- 9 a. Draw the sketch of coning of wheel and canting of rail. Explain the same. (10 Marks)
 b. List and explain the Aircraft characteristics. (10 Marks)

OR

- 10 a. Brief the Traffic regulations and control. (05 Marks)
 b. Explain briefly the traffic characteristics. (05 Marks)
 c. Explain orientation of runway by using wind rose diagram. (10 Marks)
