USN | | | | | | | | | | |

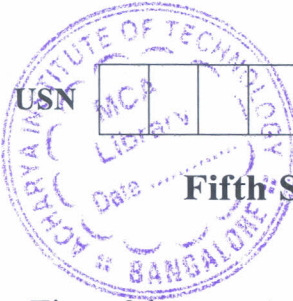## Fifth Semester B.E. Degree Examination, June/July 2024
Transportation Engineering

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 $14000 km^2$ 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 rain-full 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 sate 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)**

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