

USN

Course Code 2 2 C V 6 2

Sixth Semester B.E. Degree Examinations, May/June 2026

TRANSPORTATION ENGINEERING

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions choosing ONE full Question from each Module
 2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO: PI)</u>
<u>Module-1</u>			
1.	a. What are the types of roads and its classification? Explain the classification based on (i) weather conditions (ii) Carriageway (iii) urban roads	10	(2 : 1: 1.2.1)
	b. Explain the recommendations of Jayakar committee and how they were implemented?	10	(2 : 1 : 1.2.1)
(OR)			
2.	a. Explain the various characteristics of road transport in comparison with other mode of transportation and mention different modes of transportation.	10	(3 : 1 : 1.2.1)
	b. Explain briefly the salient features of third twenty-year road plan.	10	(2 : 1 : 1.1.1)
<u>Module-2</u>			
3.	a. The design speed of a highway is 80 kmph. There is a horizontal curve of radius 200 m on a certain locality. Safe limit of transverse coefficient of friction is 0.15. (i) Calculate the super elevation required to maintain this speed. (ii) If the maximum super elevation of 0.07 is not to be exceeded, calculate the maximum allowable speed on this horizontal curve as it is not possible to increase the radius.	10	(3 : 2 : 2.1.1)
	b. Demonstrate the engineering surveys of highway alignment.	10	(2 : 2 : 2.2.1)
(OR)			
4.	a. Calculate the safe stopping sight distance for design speed of 50 kmph. (Assume $f=0.37$ and reaction time, $t=25$ sec). For (i) Two way traffic on two lane road. (ii) Two way traffic on single lane road.	10	(3 : 2 : 2.1.1)
	b. Explain the PIEV theory with neat sketch.	10	(2 : 2 : 2.2.1)
<u>Module-3</u>			
5.	a. Explain the construction procedure and quality control checks of BC layer.	10	(3 : 3 : 3.2.1)
	b. Differentiate between (i) Bitumen and Tar (ii) Emulsion & cut back	10	(2 : 3 : 3.1.1)

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)

(OR)

6. a. With the neat sketches illustrate conduction of plate load test to determine modulus of sub grade reaction. 10 (3 : 3 : 3.2.1)
b. Explain the construction procedure and Quality control checks of GSB. 10 (3 : 3 : 3.2.1)

Module-4

7. a. What are the types of pavements and explain the components of flexible pavements. 10 (2 : 4 : 2.2.1)
b. With the help of neat sketch, explain how subsurface drainage system is provided to lower the ground water table. 10 (2 : 4 : 4.1.1)

(OR)

8. a. Define highway drainage. Explain the importance and requirements of highway drainage? 10 (2 : 4 : 4.1.1)
b. Explain the significance and concept of ESWL in pavement design with the neat sketch (graphical method). 10 (3 : 4 : 4.2.1)

Module-5

9. a. Calculate the annual cost of a stretch of highway from the following data: 10 (2 : 5 : 5.1.1)

Item	Total cost, Rs. In lakhs	Estimated life, years	Rate of Interest, %
Land	35.0	100	6
Earthwork	40.0	40	8
Bridges, Culverts and Drainage	50.0	60	8
Pavement	100.0	15	10
Traffic signs and road appurtenances	15.0	5	10

The average cost of maintenance of the road is Rs. 1.5 lakhs per year.

- b. With a neat typical layout of an airport, explain its components. 10 (2 : 5 : 5.2.1)

(OR)

10. a. Define orientation of runway. Briefly explain the procedure of plotting wind rose diagram. 10 (3 : 5 : 5.1.1)
b. Explain the aircraft characteristics in detail. 10 (2 : 5 : 5.2.1)

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