



Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Transportation Engineering

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the characteristics of Road transport in comparison with other transport. (06 Marks)
- b. What is Jayakar Committee and what are its recommendation? How is it implemented? (06 Marks)
- c. Determine the length of different categories of roads in a state in India using the 3rd road development plan formulae and the given data :
 - i) Total area of the State = 4,30,000 Sq. km.
 - ii) Total number of towns = 550.
 - iii) Overall road Density aimed at = 75km/100 km². (08 Marks)

OR

- 2 a. List the factors affecting the Alignment. Briefly explain the Engineering surveys for Highway alignment. (06 Marks)
- b. List the silent features of: i) KSHIP ii) NHDP. (06 Marks)
- c. Fix the priority for the following system of roads assuming suitable population and productivity units : (08 Marks)

Road Link	Length (km)	Number of villages with population served			Productivity served in Tonnes	
		<1000	1001 to 2000	> 2000	Agriculture	Industrial
A	35	18	14	6	26000	10000
B	28	13	8	5	16000	12000
C	21	12	5	3	10000	14000

Module-2

- 3 a. Explain briefly any two important surface characteristics influencing highway geometric design. (06 Marks)
- b. Define Super Elevation. Derive an expression for super elevation with neat sketch. (08 Marks)
- c. Determine SSD on a : i) Level road ii) Down grade of 1 in 120. (06 Marks)
 Take $t = 2.5$ secs , $f = 0.35$, $v = 80$ kmph.

OR

- 4 a. Draw a neat sketch of flexible pavement cross – section and show the component parts. Enumerate the functions of each components of the pavement. (10 Marks)
- b. Explain 'ESWL' and the graphical method of determination of ESWL for dual wheel assembly. (10 Marks)

Module-3

- 5 a. List the soil classification systems and explain briefly the HRB soil classification system. (07 Marks)
- b. What are the desirable properties of road aggregates? Mention the laboratory tests conducted to determine the property. (07 Marks)
- c. Distinguish between cutback and emulsion and list the tests on Bitumen. (06 Marks)

OR

- 6 a. Explain the procedure involved in the preparation of sub – grade layer along with quality control tests. (10 Marks)
- b. Explain step by step procedure for construction of : (10 Marks)
- i) Water Bound Macadam ii) Bituminous concrete.

Module-4

- 7 a. Explain the significance and requirements of a Highway Drainage System. (10 Marks)
- b. With a neat sketch, explain lowering of water table and control of capillary rise. (10 Marks)

OR

- 8 a. Explain briefly the quantifiable and non – quantifiable benefits for a highway user. (10 Marks)
- b. Write a note on : i) BOT ii) BOOT iii) VOC. (10 Marks)

Module-5

- 9 a. In detail explain the road user characteristics. (10 Marks)
- b. Discuss the various traffic studies and what are the objectives of carrying out traffic volume studies. (10 Marks)

OR

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- 10 a. Define Permanent way. Draw the neat diagram of cross – sectional view of permanent way and describe the component parts. (10 Marks)
- b. Draw a neat sketch of layout of an airport and explain the functions of each component. (10 Marks)
