



CBCS SCHEME

21CV52

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 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. 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.
Take $t = 2.5$ secs , $f = 0.35$, $v = 80$ kmph. (06 Marks)

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 :
i) Water Bound Macadam ii) Bituminous concrete. (10 Marks)

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

- 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)

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