BCV403

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025
Transportation Engineering

Time: 3 hrs.   Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain the role of transportation in social and economic development of country.	10	L2	CO1
	b.	Enumerate the steps for practical design of super elevation considering mixed traffic as per IRC guidelines.	10	L2	CO1
		OR			
Q.2	a.	Explain the factor affecting geometric design of highways.	10	L2	CO1
	b.	Calculate the safe stopping sight distance for design speed of 50 Kmph for i) Two way traffic on two lane road ii) Two way traffic on a single lane road Assume f = 0.37 and reaction time t = 2.5 Sec.	10	L3	CO1
		Module – 2			
Q.3	a.	Explain the desirable properties of road aggregates. List the various tests to access these properties.	10	L2	CO2
	b.	Explain the factors controlling design of flexible highway pavement.	10	L2	CO2
		OR			
Q.4	a.	With neat sketches, explain the following types of joints in CC pavement. i) Expansion Joint ii) Contraction Joint	10	L2	CO2
	b.	With neat sketches, explain the different methods of providing subsurface drainage system.	10	L2	CO2
		Module – 3			
Q.5	a.	What are the various road user characteristics? Explain any two characteristics.	10	L2	CO3
	b.	What are the different traffic engineering studies carried out for collecting traffic data? Explain any two methods.	10	L2	CO3

		OR			
Q.6	a.	What are the various methods of conducting speed and delay survey? Explain the floating car method of survey.	10	L2	CO3
	b.	Spot speed studies are carried out at a certain stretch of a highway with mixed flow and the consolidated data collected are given below :	10	L3	CO3

Speed rang Kmph	No. of vehicles observed	Speed range Kmph	No. of vehicles observed.
0 to 10	12	50 to 60	255
10 to 20	18	60 to 70	119
20 to 30	68	70 to 80	43
30 to 40	89	80 to 90	33
40 to 50	204	90 to 100	9

Determine :
i) Upper and lower speed limits for regulations.
ii) Design speed for checking the geometric design elements of the highway.

		Module – 4			
Q.7	a.	What do you understand by a permanent way? Mention the requirement of an ideal permanent way.	10	L2	CO4
	b.	What are the functions and requirements of rails?	10	L2	CO4
		OR			
Q.8	a.	What are the functions and requirements of sleepers?	10	L2	CO4
	b.	What are the functions and requirements of ballast?	10	L2	CO4
		Module – 5			
Q.9	a.	What are the various factors considered in the selection of suitable site for airport?	10	L2	CO5
	b.	An airport is planned at an elevation of 380 m above MSL. The monthly mean of maximum and average daily temperature for the hottest month at the site are 40°C and 28°C respectively. The effective gradient is 0.18 percent. Determine the length of runway required at the proposed site if the basic runway length is 1900 m.	10	L3	CO5
		OR			
Q.10	a.	List and explain aircraft characteristics which affect planning and design of airport.	10	L2	CO5
	b.	What is wind rose diagram? Explain any one method of orientation of runway with wind rose diagram.	10	L2	CO5

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