CBCS SCHEME
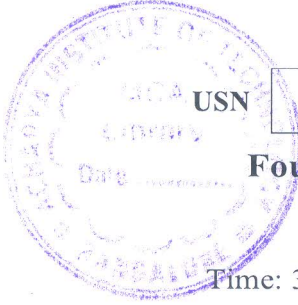
BCV403

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
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.	Mention the different modes of transportation. Explain the characteristics of road transport.	6	L1	CO1
	b.	Mention the Jayakar committee recommendations and its implementations.	6	L1	CO1
	c.	Calculate the minimum sight distance required to avoid a head on collision of 2 cars approaching from the opposite direction at 90 and 60 kmph. Assume a reaction time of 2.5 sec, co-efficient of friction of 0.7 and break efficiency of 50% in both the cases.	8	L2	CO1
		OR			
Q.2	a.	Explain Engineering surveys.	6	L1	CO1
	b.	Mention the various cross-sectional elements to be designed for a highway and explain them briefly.	6	L1	CO1
	c.	Vertical summit curve is formed due to the intersection of 2 gradients +5% and -6%. Design the length of summit curve to provide SSD for a design speed of 80kmph. Assume any other data suitably.	8	L2	CO1
		Module – 2			
Q.3	a.	Explain the desirable properties of subgrade soil.	6	L2	CO2
	b.	With a neat sketch, explain the functions of component parts of flexible pavement.	6	L2	CO2
	c.	Explain the significance of Highway Drainage.	8	L2	CO2
		OR			
Q.4	a.	Explain the desirable properties of road aggregates.	6	L2	CO2
	b.	Distinguish between flexible pavement and rigid pavement.	6	L2	CO2
	c.	List the objectives of i) Surface drainage ii) Sub-surface drainage of roads.	8	L2	CO2
		Module – 3			
Q.5	a.	List the different road user characteristics and explain the concept of PIEV theory.	10	L2	CO3

	b.	Following data were obtained from the spot speed studies suggest:
		i) Speed limit for regulation
		ii) Lower speed causing congestion
		iii) Speed to check the geometric design elements
		
		        Speed range (kmph) No. of vehicles
		            5-10 230
		          10-15 375
		          15-20 500
		          20-25 680
		          25-30 525
		          30-35 430
		          35-40 290
		          40-50 110
		          50-60 25
		          60-70 8
			10	L3	CO3

OR					
Q.6	a.	Discuss the various types of traffic studies. What are the objects of carrying out traffic volume studies?	10	L2	CO3
	b.	The average normal flow on cross roads A and B during design period are 400 and 250 PCU per hour. The saturation flows are 1250 and 1000 PCU per hour respectively. The all red time required for pedestrian crossing is 12 seconds. Design a two-phase signal by Webster's method.	10	L3	CO3
Module – 4					
Q.7	a.	Describe the requirements of an ideal permanent way.	10	L2	CO4
	b.	Determine the quantity of materials required to construct a 800m long B.G. railway track, assuming a sleeper, density of $(n + 5)$.	10	L2	CO4
OR					
Q.8	a.	What are the functions and requirements of sleepers and Ballast?	10	L2	CO4
	b.	If a 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of a B.G yard, calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45kmph.	10	L2	CO4
Module – 5					
Q.9	a.	List the various elements of an air port and explain with a neat sketch.	10	L2	CO4
	b.	Describe the elements of taxiway geometric design.	10	L2	CO4
OR					
Q.10	a.	Explain the factors, which influence the site selection for airport.	10	L2	CO4
	b.	List the assumed conditions under which basic runway length is determined. Explain the normal landing case.	10	L2	CO4

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