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Reg. No. : | | | | | | | | | | |

Question Paper Code: 99177

B B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Open elective

Computer Science and Engineering

19UCE977- Road Safety

(Common to ECE, EEE, EIE, Mechanical, IT, Chemical, Agri, Bio Medical)

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. $\sum_r p(r) = 1 \quad and \quad \int_{-\infty}^{\infty} f(x)dx = 1$ is denoting a ……. CO1- U

(a) skewness (b) Probability density function

(c) cumulative function (d) kurtosis

2. The diagram which provides accident data such as crash type, severity, speed, light *conditions*, and road *conditions* are CO2- U

(a) Condition diagram (b) Collision diagram

(c) FIR (d) Investigation certificate

3. The popular traffic control device is CO3- U

(a) Road Marking (b) Speed breakers (c) Traffic signals (d) Rumbled strips

4. Grade separators helps in CO4- U

(a) Saving travel time (b) nullifying the conflicts

(c) avoiding conflicts and saving travel time (d) reduce travel distance

5. ……is the maximum hourly rate at which persons or vehicles can be reasonably expected to traverse a point CO5- U

(a) Highway Capacity (b) Concentration (c) Density (d) Highway LOS

PART – B (5 x 3= 15 Marks)

6.	Comment on the Influence of traffic speed on highway capacity.	CO1- App
7.	Justify the use of chi-square distribution in traffic analysis with a case study	CO2- App
8.	Under what conditions, Regulatory roadsigns are installed in an urban intersection? Justify with fundamental requirements for installing a traffic control device.	CO3- Ana
9.	Suggest suitable strategies to modify an urban transport mode into sustainable mode?	CO4- App
10.	Predict the outcomes of a road safety audit conducted on a Madurai - Aruppukottai highway, based on the flow of traffic on this stretch.	CO5- Ana

PART – C (5 x 16= 80Marks)

11.	(a)	Highlight the problems created due to the steady state conditions of traffic	CO1- App	(16)
		Or		
	(b)	Under what conditions, queuing theory concepts are applied in traffic engineering.	CO1- App	(16)
12.	(a)	Create a basic mathematical model showing the correlation between the vehicle characteristics and road user characteristics (Choose any 4 parameters).	CO2- App	(16)
		Or		
	(b)	Design a parking facility to accommodate 500 cars at the city center of Madurai adopting the 30deg, 45deg parking pattern. Adopt the fundamentals of parking standards.	CO2- App	(16)
13.	(a)	Create a static model showing the road cross sectional elements showing super elevation, camber, horizontal curve and gradient to demonstrate their vulnerability for accidents, with a case study of Madurai/Chennai/any other city	CO3- Ana	(16)
		Or		
	(b)	Suggest suitable strategies to change the habit of traffic violations among the youngsters on Road.	CO3- Ana	(16)
14.	(a)	Analyse the role and scope of grade separated intersections in a growing city such as Madurai and Trichy.	CO4- App	(16)
		Or		

	(b)	Correlate between Occupancy (no. of persons in a vehicle) and Probability of Accident occurrence by analyzing the traffic conditions on the NH roads	CO4- App	(16)
15.	(a)	Design a questionnaire for a road safety audit at selected locations of NH43 (Valayankulam to Aruppukottai) to analyze the performance standards of the chosen road stretches.	CO5- App	(16)
		Or		
	(b)	Expedite the scope of increasing the capacity of a highway without compromising the interests of slow-moving vehicles. Present a case study in from native city.	CO5- App	(16)