A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99177

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Open elective

Computer Science and Engineering

19UCE977 - Road Safety

(Common to ECE, EEE, EIE ,MECH,IT, Chemical, AGRI & BME Engineering branches)

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Predicting y for a value of x that's outside the range of values in the original data is _____ CO1- U

   (a) Interpolation (b) Extrapolation. (c) Regression (d) Correlation

2. The physical characteristics of the driver are CO1- U

   (a) Reaction to the external stimuli (b) Color blindness

   (c) Perception time (d) Breaking ability

3. The diagram which provides accident data such as crash type, severity, speed, light conditions, and road conditions are CO1- U

   (a) Condition diagram (b) Collision diagram

   (c) FIR (d) Investigation certificate

4. The Total width of three lanes road is CO1- U

   (a) 7.4m (b) 7.0m (c) 10.5m (d) 7.4m

5. The popular traffic control device is CO3- App

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

6. The traffic control devices used in day and night are…….. CO3- App

   (a) Traffic signs (b) Road marking and Traffic signals

   (c) Traffic signals (d) Road markings

7. Grade separators helps in CO4- App

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

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

8. Overtaking on the two lane undivided roads is mainly due to CO4- App

(a) Over speeding of overtaking vehicles (b) Slow speed of overtaken vehicle

(c) Over speed of overtaken vehicle (d) Poor visibility during overtaking

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

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

10. Vision Enhancement for Crash Avoidance, collision avoidance are part of the_____ CO5- App

(a) Advance vehicle control and safety systems (b) Incident Management

(c) Automated Vehicle operations (d) Emergency management

PART – B (5 x 2= 10 Marks)

11. Define highway capacity. CO1- U

12. What is meant by condition diagram CO2- U

13. Under what conditions, Regulatory road signs are installed in an urban intersection? Justify with fundamental requirements of Traffic control devices. CO3- Ana

14. Correlate the importance of sight distances and breaking distance of a vehicle. CO5- Ana

15. Predict the outcomes of a road safety audit conducted on a Madurai - Aruppukottai highway, based on the flow of traffic on this stretch CO6- Ana

PART – C (5 x 16= 80 Marks)

16. (a) Analyze the scope and applications of Chi-square & Normal distributions in analyzing the traffic data. CO1- App (16)

Or

(b) Under what conditions, Poisson distribution is used to model the traffic flow. Justify your response. CO1- App (16)

17. (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)
18.	(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	CO5- Ana	(16)
		Or		
	(b)	Suggest suitable strategies to change the habit of traffic violations among the youngsters on Road.	CO3- Ana	(16)
19.	(a)	Analyze the traffic flow in a bottleneck condition when one lane of a four-lane divided carriage way is closed for repairs. Justify your response with neat sketches (a) Flow is less than capacity of bottleneck (b) Traffic flow is equal to bottleneck capacity	CO4- Ana	(16)
		Or		
	(b)	Analyze the causes and reasons behind Right angled collision accidents involving heavy motor vehicles and SMV.	CO4- Ana	(16)
20.	(a)	Analyze the factors affecting capacity and level of service based on the time series data collected on four lane roads of Madurai city.	CO4- App	(16)
		Or		
	(b)	Analyze the role of different functional areas of ITS in Road safety and Traffic management	CO5- App	(16)