PRESIDENCY UNIVERSITY
BENGALURU   **SET B**

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024

Semester : Semester VII - 2020   **Date :** 08-JAN-2024
Course Code : CIV2026   **Time :** 9:30AM - 12:30 PM
Course Name : Traffic Engineering   **Max Marks :** 100
Program : B.Tech.   **Weightage :** 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS   **4 X 5M = 20M**

1. List the various Vehicular characteristics observed in Road user characteristic

   (CO1) [Knowledge]

2. Traffic in a congested multilane highway is observed to have an average spacing of 60m and an average headway of 3.8 sec in a lane. Estimate the rate of flow , density and speed of the traffic in that lane.

   (CO2) [Knowledge]

3. Write any 5 uses of Origin and Destination survey

   (CO3) [Knowledge]

4. Write any five applications of Intelligent Transportation System (ITS).

   (CO4) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS   **5 X 10M = 50M**

5. The physical, mental and psychological factors are the main road user characteristics that govern the safe operation of the vehicle on the road. Explain the Physical and Mental characteristics of a Road user.

   (CO1) [Comprehension]

6. There are 3 major models that come under Single Regime Traffic Stream. One of the models is Greenshield's model.
   (i) Name the other two and site   ferences between all the 3 along with formula.
   (ii) Calculate the Maximum flow on the stretch if the Speed and density are related as $V = 100 – 0.5K$, where V =kmph and K= vehicles/km. Use the Greenshield's model.
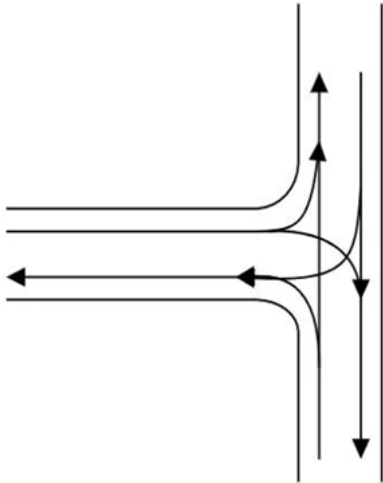
   (CO2) [Comprehension]

7. One of the major problems created by Road traffic is parking. The vehicle parked in a wrong manner can lead to traffic congestion, accidents and also environmental pollution. There are two types of parking systems namely On-street parking and Off –street parking. Explain the different types of On-street parking systems with neat diagrams.

(CO3) [Comprehension]

8. Conflict points are the points where two vehicles can potentially collide with each other at road intersections. We can determine the number of conflict points based upon the type of intersection. With this regard,
   (i) Describe the four traffic conflict types with neat diagrams.
   (ii) Considering a three- arm intersection and assuming a two way traffic, Identify the major and minor conflict points in the figure given below and count the number of conflicts.

(CO4) [Comprehension]

9. In Origin and Destination studies, the routes taken by various vehicles are observed by collecting data using various techniques. Explain any five methods of performing the Origin and Destination studies and also write the advantages and disadvantages of each method.

(CO3) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS   **2 X 15M = 30M**

10. Traffic studies are carried out to analyze the traffic characteristics that helps in deciding the geometric design features for safe and efficient traffic movement. There are various traffic survey studies that are conducted such as Speed studies, Spot speed study, Speed and delay studies, O & D studies, Parking study, Accident studies and many more. From the above given list, describe any three traffic survey studies in detail along with the methods using which these surveys are conducted.

(CO3) [Application]

11. Find the Capacity of the Rotary if the width of approaches for a Rotary intersection is 12 m. The entry and exit width of the rotary is 10m. Table below gives the traffic from the four approaches, traversing the intersection.

Approach	Left Turn	Straight	Right Turn
North	300	500	400
South	300	350	420
East	250	400	500
West	300	400	350

(CO4) [Application]