Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree (S,FE) Examination May 2022 (2015 Scheme)

Course Code: CE366

Course Name: TRAFFIC ENGINEERING AND MANAGEMENT

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) What is meant by traffic segregation? Explain how traffic segregation can be achieved on roads? (5)

b) Explain different methods of restriction on turning movements with the help of neat sketches. (10)

2 a) What are the regulations concerning speed? (5)

b) A four-legged intersection is formed when a state highway meets with a major district road (MDR). The building constructed on the corner of intersection is having an offset of 20m from the state highway and 15m from MDR as shown in Figure.1. Assuming all vehicles are travelling at design speed through the center of a lane, examine whether the given intersection is safe or not. If not, suggest the improvement strategies to be implemented at the intersection. (10)

(Given: Both roads are 2 lane roads with 2-way traffic having lane width 3.5m and passing through rolling terrain. The coefficient of friction of road surfaces is 0.35 and reaction time of a standard driver is 2.5 seconds)

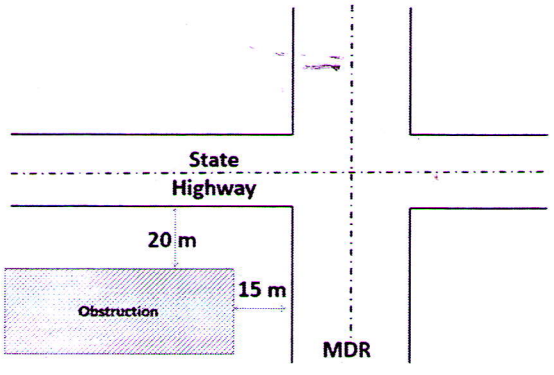

Figure 1. Intersection

3 a) List the chapters enclosed in the Motor Vehicles Act 1988. (5)

b) What are the different functional areas of Intelligent transportation system? Explain the components and functions of each of these functional areas. Justify the benefits of ITS in Indian traffic condition. (10)

PART B

Answer any two full questions, each carries 15 marks.

4 a) How is capacity significant in highway transportation studies? (5)

b) Explain level of service (L.O.S) as specified in Highway Capacity Manual. What are the factors controlling L.O.S. Also discuss in detail the different LoS of a traffic system. (10)

5 a) Illustrate two different forms of grade separated intersections with explanation. (5)

b) Mention and explain the steps involved in determining peak-hour flow rate, free flow speed and LOS for the level terrain portion of the highway segment of undivided four-lane highway. (10)

6 a) Define basic capacity, possible capacity and practical capacity. (5)

b) What are the advantages and disadvantages of fixed time traffic signal system? (10)

PART C

Answer any two full questions, each carries 20 marks.

7 a) Explain the basic concepts of Lighthill Whitham's theory. (5)

b) What are the assumptions made in simple queuing approach? (5)

c) Explain the various factors which cause road accidents. (10)

8 a) With the help of a neat sketch explain collision diagram in accident analysis. (5)

b) Assume a linear relationship between speed and density on a length of a highway having the free flow speed of 80 km/hr and the jam density of 72 vehicles /km. Determine the speed at maximum flow and the maximum flow expected on this section of the road. (5)

c) Explain car following theory. List the classification of car-following models and have a detailed discussion on any three car following models. (10)

9 a) Explain time mean speed, space mean speed and the relationship between them. (5)

b) How does roadway factors influence accidents. (5)

c) With the help of neat sketches explain how the fundamental parameters of traffic flow are related to each other. (10)

*****