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15CV561

Fifth Semester B.E. Degree Examination, Dec. 2020

Traffic Engineering

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Mention various factors that affect road user characteristics. Briefly explain any two. (08 Marks)
- b. Explain with sketch PIEV theory in analyzing driver's reaction time. (08 Marks)

OR

- 2 a. Briefly discuss Urban Traffic problems in India. (08 Marks)
- b. Explain the concept of sustainable urban transport and integrated land use. (08 Marks)

Module-2

- 3 a. The spot speed studies were carried out at a certain stretch of a highway. Determine:
 - (i) The upper and lower speed limit values for mixed traffic.
 - (ii) Speed to check geometric design elements.

Speed range in kmph	No. of vehicles observed	Speed range kmph	No. of vehicles observed
0 to 10	12	50 to 60	255
10 to 20	18	60 to 70	119
20 to 30	68	70 to 80	43
30 to 40	89	80 to 90	33
40 to 50	204	90 to 100	9

(08 Marks)

- b. With a help of Desire line diagram, explain the concept of origin and destination survey.

(08 Marks)

OR

- 4 a. Discuss the various types of parking, their advantages and disadvantages. (08 Marks)
- b. Explain in brief level of service concept and factors affecting LOS. (08 Marks)

Module-3

- 5 a. Design a Rotary Intersection for the traffic flow in an urban section. At the intersection of two highways in the design year are given below:

Approach	Left turning			Straight ahead			Right turning		
	Cars	Commercial	Scooter	Cars	Commercial	Scooter	Cars	Commercial	Scooter
N	200	50	100	250	100	150	150	50	80
E	180	60	80	220	50	120	200	40	120
S	250	80	100	150	50	90	160	70	90
W	220	50	120	180	60	100	250	60	100

Consider PCU values for cars 1. Commercial vehicles 2.8 and for scooters 0.75, entry width 10 m, length of weaving section 55 m. (10 Marks)

- b. List different types of grade-separated intersections and explain any one of them. (06 Marks)

150

OR

- 6 a. The 15 minute-traffic counts on cross roads 1 and 2 during peak hour are observed as 178 and 142 vehicles per lane respectively approaching the intersection in the direction of heavier traffic flow. If the amber times required are 3 and 2 seconds respectively for two loads based on approach speeds, design the signal timings by trial cycle method. Assume an average time headway of 2.5 seconds during green phase. (10 Marks)
- b. Explain the following with examples:
- (i) Regulatory signs
 - (ii) Warning signs
 - (iii) Informatory signs
- (06 Marks)

Module-4

- 7 a. What are the objectives and causes of Road Accidents? (08 Marks)
- b. Explain with neat sketch lighting layouts. (08 Marks)

OR

- 8 a. Explain vehicular traffic and environmental hazards. (08 Marks)
- b. I-Iow integration of public transportation will increase safety of commuters? (08 Marks)

Module-5

- 9 a. List different Travel Demand Management techniques adopted to reduce traffic flows specially during peak hours. (08 Marks)
- b. Discuss the advantages and disadvantages of one way streets. (08 Marks)

OR

- 10 a. Discuss the applications of I.T.S in traffic management. (08 Marks)
- b. Explain road safety education and enforcement. (08 Marks)