APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY

08 PALAKKAD CLUSTER

QP. code :TB1181   (Pages: 1 to 4)

FIRST SEMESTER M.TECH. DEGREE EXAMINATION DEC 2018

Branch: Civil Engineering   **Specialization: Transportation Engineering**

08CE6201   **FUNDAMENTALS OF TRAFFIC ENGINEERING**

Time:3 Hours   Max. Marks: 60

Answer All Six Questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

(Use of Probability Distribution Tables Permitted)

Q.No.	Module 1	Marks
1.a)	From traffic engineering point of view, explain the importance of cone of vision and peripheral vision.	3
	Answer b or c	
b)	Explain the vehicular characteristics that will affect the traffic performance and planning.	6
c)	Explain the fundamental diagrams of traffic flow with neat sketches.	6

Q. No.	Module 2	Marks
2.a)	Differentiate space mean speed and time mean speed.	3
	Answer b or c	
b)	The spot speeds at a particular location are normally distributed with a mean of 51.7 kmph and a standard deviation of 8.3 kmph.	6

a) What is the 85th percentile speed?

b) What is the probability that

    i)   the speed exceeds 65 kmph?

    ii) the speed lies between 40 kmph and 70 kmph?

c) A moving observer method was conducted on a 0.7 km road and the following average observations were made

Direct-ion	Ave. Journey time (min.)	Ave. Stopped time (min.)	C	B	T	Overtaking Vehicles	Overtaken Vehicles
North Bound	0.94	0.10	78	5	38	7	4
South Bound	1.06	0.09	61	1	21	9	3

C- Car, B – Bus and T - Truck

Calculate the flow in PCU per hour in both directions of traffic and Journey speed and running speed. Assume PCU for car, bus and truck as 1,3 and 2 respectively.

6

Q.No.	Module 3	Marks

3.a) What are the applications of data exploration techniques in Transportation Engineering?   3

Answer b or c

b) Fit an appropriate distribution to the following data of vehicle arrivals during 30sec intervals: 6

Veh/interval	3	4	5	6	7	8	9	10
Frequency	2	1	6	11	14	12	8	6

Check the fit at the 5% level of significance.

c) How are speed and concentration related? Distinguish between linear and non linear models.   6

Q.No.	Module 4	Marks
4.a	What are the different traffic management measures?	3

Answer b or c

b	Explain the general principles of traffic signing with special emphasis to Indian Motor Vehicles act.	6
c	List out the regulations implemented in pedestrians.	6

Q.No.	Module 5	Marks
5.a	How is amber time explained?	4

Answer b or c

b	Illustrate a signalized four legged intersection with exclusive right turning lanes	8
c	Traffic flow in an urban sections at the intersection of two highways in the design year are given below:	8

Approach	Left Turning			Straight Ahead			Right Turning		
	Cars	Commercial	TW	Cars	Commercial	TW	Cars	Commercial	TW
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	120	60	100	250	60	100

The highways at present intersect at right angles and have a carriageway width of 15m. Design a rotary intersection making suitable assumptions.

Q.No.	Module 6	Marks
6.a	Distinguish between microscopic and macroscopic models.	4

<div align="center">**Answer b or c**</div>

		Marks
b	Explain	8
	i) Interrupted and uninterrupted Traffic	
	ii) Vehicular speed trajectories	
c	Explain traffic stream characteristics.	8