Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2711302 **Date:17/05/2016**

Subject Name: Traffic Engineering

Time:02:30 pm to 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** List basic & derived traffic flow parameters? Discuss relations between them using time space diagram? **07**

(b) Define the terms: TMS, SMS, gap, stop delay, travel time delay, time headway, and design speed. **07**

Q.2 **(a)** Define capacity & LOS. List factors influencing capacity & LOS? Discuss capacity & level of service for freeway & at signalized intersection? **07**

(b) Develop relation between time mean speed & space mean speed? **07**

OR

(b) Describe the traffic and site conditions which justify the installation of signal control at a priority intersection?

Q.3 **(a)** Write a note on delay studies. **07**

(b) Describe relation between speed, density & flow for highway? **07**

OR

Q.3 **(a)** Define: Platoon, AADT, ADT, PHF, VDF, Tidal flow, Queuing. **07**

(b) Explain different types of conflicts? Prepare conflict diagram for 3 legged intersections? **07**

Q.4 **(a)** What is meant by flow channelization? How is it achieved? What are its advantages? **07**

(b) What is saturation flow? List factors influencing saturation flow? Discuss method to measure saturation flow? Suggest technique to improve saturation flow? **07**

OR

Q.4 **(a)** Define: Inter green period, cycle time, effective green, signal phase, dilemma zone, Signal coordination, & lost time. **07**

(b) Compare trail cycle method & Webster method of signal design? **07**

Q.5 Explain how delay at traffic signal controlled intersection may be estimated. For a signal with saturation flow of 3672pcu/hour and a demand flow of 720 pcu/hour. Calculate the average delay on the approach when the cycle time is 40sec, 60sec, 80sec. Given the total lost time per cycle is 12sec and the effective green time for the approach is 0.3 of the available effective green time, comment on your results. **14**

OR **07**

Q.5 **(a)** Describe how journey speeds be measured using moving car observer method? **14**

Six runs were made in each direction along a two way highway between Smith Avenue and Guinn Square. Flows were measured both with & against the moving car and following notes obtained.

Car travelling from Smith Avenue to Guinn Square

TRIP		Number of Vehicles		
Commences	Ends	Overtaking	Overtaken	Met
16.05	16.16	2	1	401
16.34	16.44	3	2	360
17.05	17.17	4	1	419
17.35	17.44	5	3	397
18.05	18.18	2	1	406

18.35	18.45	2	3	412

Car travelling from Guinn Square to Smith Avenue

TRIP		Number of Vehicles		
Commences	Ends	Overtaking	Overtaken	Met
16.19	16.31	3	2	320
16.50	17.03	7	3	319
17.20	17.32	4	2	307
17.50	17.59	4	3	331
18.20	18.33	5	2	317
18.50	19.01	7	1	305

Distance from Smith Avenue to Guinn Square is 6.4 km.
Calculate the flow & stream speed in each direction.

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