Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014

Subject code: 731303 **Date: 27-11-2014**

Subject Name: Traffic Flow Theory and Simulation

Time: 02:30 pm - 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)** Explain how Fluid Flow Analogy Approach is applicable to study traffic stream characteristic. **07**

(b) What do you mean by headway distribution? Explain Time headway distribution by giving suitable example. Also List the difficulties and limitations for getting headway distribution. **07**

Q.2 **(a)** Explain the influence of static and dynamic PCU in analyzing traffic stream characteristics. **07**

(b) During a 60 sec Period, a detector is occupied by vehicles for the following time: 0.34, 0.38, 0.40, 0.32, 0.52 seconds. Estimate the values of flow, density and speed. (Assume loop detector length = 3m and the average length of vehicle = 6m. **07**

OR

(b) Vehicles arrive at a toll booth at an average rate of 300 per hour. Average waiting time at the toll booth is 10s per vehicle. If both arrivals and departures are exponentially distributed, what is the average number of vehicles in the system, average queue length, the average delay per vehicle, the average time a vehicle is in the system? **07**

Q.3 **(a)** Describe the methodology to find saturation flow. **07**

(b) For the following data on speed and density, determine the parameters of the Green shieldsô model. Also find the maximum flow and density corresponding to a speed of 30km/hr. **07**

k	171	129	20	70
v	5	15	40	25

OR

Q.3 **(a)** Explain in detail Car following theory. **07**

(b) Explain deterministic and probabilistic model predicting traffic behaviour. **07**

Q.4 **(a)** Define gap acceptance. Explain the principle of gap acceptance. **07**

(b) Briefly discuss how could you evaluate the influence of encroachment and On-street parking on the vehicular stream characteristic? **07**

Q.5 **(a)** Enlist various Models of Delay at Intersections and Pedestrian Crossings. Explain any one in detail. **07**

(b) Write a note on Greenbergôs logarithmic model. **07**