Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Sem. – II[nd] - Examination – June/July- 2011

Subject code: 1721901

Subject Name: Traffic Flow Theory & Management

Date:22/06/2011 **Time: 10:30 am – 01:00 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)** A tall booth at the entrance to a bridge can handle 120 veh/hour, the time to process a vehicle being exponentially distributed. The flow is 90 veh/hour with a poissonian arrival pattern. Determine: **07**

i) The average number of vehicles in the system.
ii) The length of the queue.
iii) The average time spent by the vehicle in the system.
iv) The average time spent by the vehicle in the queue.

(b) An observation on expressway yielded a count of 200 vehicles in a period of 30 minutes. Calculate the number of headways in this count: **07**

i) Greater than 4.5 seconds and
ii) Less than 18 seconds.

Q.2 **(a)** State the basic assumptions applicable to traffic flow to develop queuing theory **07**

(b) Explain visual angle model of driver's response. **07**

OR

(b) Explain the types of perchonok's approach of driver's errors with example. **07**

Q.3 **(a)** Using green shield's model, find out the maximum flow and density corresponding to a speed of 30 km/hr for the given data: **07**

K	171	129	20	70
V	5	15	40	25

(b) Explain time space diagram as a tool. **07**

OR

Q.3 **(a)** Observer test car moving at 20 km/hour on 0.5 km road stretch recorded the number of vehicles encountered in the stream while the test vehicle was moving against the traffic stream is 107, number of vehicles that had overtaken the test vehicle is 10 and the number of vehicles overtaken by the vehicle is 74, find the flow, density and average speed of the stream. **07**

(b) A vehicle traveling at 36.67 ft/sec² is approaching a stop sign. At time to and at a distance of 60 ft the vehicle begins to slow down by decelerating at 14 ft/sec². Will the vehicle be able to stop in time? **07**

Q.4 **(a)** Explain briefly tidal flow operation and principle of it which needs to translate into practice. **07**

(b) For the neighborhood traffic management process in the form of flow chart. **07**

OR

Q.4	**(a)**	State the number of benefits and demerits of closing side streets.	**07**
	(b)	State the objectives of transportation system management and their criteria's.	**07**
Q.5	**(a)**	State the key applications of transportation system management for central business districts.	**07**
	(b)	State the outputs and potential uses of traffic volume data for specific planning.	**07**

OR

Q.5	**(a)**	Write a short note on advanced traffic management systems.	**07**
	(b)	Explain the change in equilibrium brought about by TSM measures that is effectively demanding reduction.	**07**

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