Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– III • EXAMINATION – SUMMER 2015

Subject Code: 731303 **Date: 02/05/2015**

Subject Name: Traffic flow theories & simulation

Time: 2:30 pm to 5:00 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 & why fluid flow theory can be applied to Traffic flow simulations?	**07**
	(b)	What is meant by simulation studies? Why such studies are required to be studied for analyzing traffic flow, explain giving suitable examples?	**07**
Q.2	**(a)**	Discuss the analogy between flow of electric current through a circuit & traffic flow through a given network?	**07**
	(b)	What is gap & Headway distribution? Discuss.	**07**
		OR	
	(b)	List softwareôs available for traffic flow simulation? Explain working of any one of them?	**07**
Q.3	**(a)**	Explain Car following Theory. Also derive necessary equations showing stream characteristic.	**07**
	(b)	Give Poissonôs distribution of vehicle arrivals.	**07**
		OR	
Q.3	**(a)**	What is Time space diagram? How is it prepared? What are its uses?	**07**
	(b)	State and explain the criteriaôs for gap acceptance and gap rejection?	**07**
Q.4	**(a)**	Write a Programme to generate ñRandom numberò using C Language.	**07**
	(b)	Define volume counts. What are the types of counts? Enlist their uses.	**07**
		OR	
Q.4	**(a)**	Define the Terms: PCU, Homogeneous Traffic, Heterogeneous Traffic, Platoon, Static PCU, Dynamic PCU. Incident, in context to Traffic Engineering.	**07**
	(b)	Describe fundamentals of queuing Theory. Discuss how they significantly contribute to study traffic stream characteristic.	**07**
Q.5	**(a)**	Prepare a flow diagram to study the influence of flaring at all approaches of 4 legged intersections on saturation flow rates?	**07**
	(b)	What is meant by congestion? How could it be measured to study influence on traffic stream characteristic?	**07**
		OR	
Q.5	**(a)**	Write a note on shockwave and factors causing shockwave.	**07**
	(b)	What is meant by event scanning and time scanning? Explain giving suitable example.	**07**

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