Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 711902N **Date: 26-12-2013**

Subject Name: Traffic Engineering & Field Studies

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)** Explain the objects and scope of traffic engineering. **07**

(b) Discuss the objectives of traffic planning and administration in detail. **07**

Q.2 **(a)** What is traffic volume? Enumerate different methods of carrying out traffic volume studies. Explain one of them in detail. **07**

(b) How the traffic volume data is presented? Explain 30th highest hourly volume. **07**

OR

(b) Define following terms: **07**

1. Spot speed
2. Running speed
3. Time mean speed
4. Average speed
5. Operational delay
6. Queue Length
7. Level of service

Q.3 **(a)** Explain O & D studies. What are the various uses of O & D studies? **07**

(b) Explain traffic manoeuvres with sketches and their applications. **07**

OR

Q.3 **(a)** Discuss the various factors affecting practical capacity of a traffic lane. **07**

(b) What is PCU? What is its significance? Explain the factors affecting its values. **07**

Q.4 **(a)** What are the various types of parking facilities designed for traffic needs? Compare kerb parking with off-street parking. **07**

(b) A commercial house intends to construct a multistoried building to accommodate the employees. Calculate the parking space requirement for the building having following details: **07**

Area of site: 4800 sq. m

Permissible coverage: 35 %

Floor area ratio :2.5

Proportion of work trips by different modes: Cars – 10%, scooters – 10%, foot – 5%, cycles – 40% and public transport – 35%.

Parking space required for one car for 90˚ parking may be assumed as 24 sq.m.

Also assume the space required per employee of the multistoried building as 10 sq.m.

OR

Q.4 **(a)** What are the applications of location file, spot maps, collision diagrams and condition diagrams? **07**

(b) A vehicle of weight 2.2 tonne skids through a distance equal to 50 m before colliding with another parked vehicle of weight 1.1 tonne. After collision both the vehicles skid through a distance equal to 10 m before stopping. Compute the initial speed of the moving vehicle. Assume co-efficient of friction as 0.5. **07**

Q.5	**(a)**	Discuss the fundamental principle of highway lighting. What types of lamps and layouts of lamps are in use?	**07**
	(b)	Design a traffic signal on an intersection formed by two streets A and B having critical lane volumes as V_a = 450 vehicles/hr and V_b = 200 vehicles/hr during the heaviest traffic hour. Assume that the time cycle for intersection is 50 seconds and 5 seconds time is allowed between two change-overs from go to stop and vice-versa. Also assume that on the street A, the time spacing of vehicle is 3 seconds and on the street B, the time spacing of vehicle is 5 seconds.	**07**

OR

Q.5	**(a)**	What are traffic signs and markings? Give briefly more prominent but common signs and markings with sketches which you consider useful for city with a population of 5 lakhs.	**07**
	(b)	Justify the role of engineering, enforcements and educational aids for preventing the accidents. Give your suggestions.	**07**

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