Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Subject code: 711302N **Date: 17-06-2014**

Subject Name: Traffic Engineering 1

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 mark.**

Q.1 **(a)** Define the traffic engineering, what are the human road user characteristics? as a pedestrian, as a driver **07**

(b) Explain by drawing sketch vehicular characteristics with dimensions as per IRC. **07**

Q.2 **(a)** Enlist the resistances occurring during moving **07**

(b) A passenger car weighing 1.95 tonnes is required to accelerate at a rate of 2.9m/sec^2 in the first gear from the speed of 10kmph. The ascending gradient **07**
Of 0.98 %. The road has cement concrete asphalt surfacing the frontal projection area of car is 2.0 m^2. The tyre has radius of 0.33m. the rear axle gear ratio is 3.82:1 and first gear ratio is 2.78:1 calculate engine horsepower needed and also speed of engine (assume suitable data)

OR

(b) Define ADT & AADT. Describe manual method of traffic volume count. **07**

Q.3 The following is a tabulation of average daily counts and average weekly counts With automatic traffic counters of a highway. Use this data to calculate the Average daily traffic for the year based on 2days counts **14**

(i) On Tuesday in February the daily counts were 250 vehicles

(ii) On Friday in October the daily counts were 300 vehicles

Month	Actual automatic counts	% of average Daily counts	Expansion factor
January	1100	53	1.89
February	1200	58	1.72
March	1350	65	1.54
April	1400	67	1.50
May	1600	77	1.30
June	2300	111	0.90
July	3300	159	0.63
August	4200	202	0.50
September	3600	173	0.58
October	1800	87	1.15
November	1600	77	1.30
December	1500	72	1.39

Day of the week	Average daily traffic	% of average Daily traffic.	Expansion factor
Sunday	500	86	1.16
Monday	600	103	0.97
Tuesday	560	96	1.04
Wednesday	650	111	0.90
Thursday	550	94	1.06
Friday	750	128	0.78
Saturday	480	82	1.22

OR

Q.3 **(a)** Explain spot speed, space mean speed, time mean speed **05**

(b) During spot speed studies the following observations were taken by radar gun **09**
50,40, 60,54,45,31,72,58,43,52,46,56,43,,,65,33,
69,34,51,47,41,62,43 55, 40 49
Calculate time mean speed, space mean speed.

Q.4 **(a)** Describe the floating car method of speed and delay study. **04**

(b) The following observations were taken during spot speed study at aparticular **10**
Section of highway. Find the median speed, speed for traffic regulation
and speed for geometric design.

Speed group	Vehicles observed	Speed group	Vehicles observed
10-14.9	04	35-39.9	47
15-19.9	14	40-44.9	22
20-24.9	26	45-49.9	12
25-29.9	34	50-54.9	08
30-34.9	56	55-59.9	03

OR

Q.4 **(a)** What is necessity of origin and destination studies describe any one method. **07**

(b) Explain by drawing sketch terminal location by method of moments. **07**

Q.5 **(a)** What are the purposes of parking studies?Define- space hour, parking accumulation, parking load. **07**

(b) What are the types of accidents? Describe in detail accident reporting. **07**

OR

Q.5 **(a)** Describe the field sheet for parking space inventory. **07**

(b) What are the preventive measures for reducing accidents? Give also table **07**
For improvement type and reduction in accidents.

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