# B.E. Civil Engineering Seven Semester CE706 - Elective-I : Traffic Engineering

# P. Pages: 3

Time : Three Hours

GUG/W/18/1738

Max. Marks: 80

Notes : 1. All questions carry equal marks & compulsory.

- 2. Answer **all** questions.
- 3. Assume suitable data wherever necessary.
- 4. Illustrate your answers wherever necessary with the help of neat sketches.
- **1.** a) Define and give scope of Traffic Engineering.
  - b) A passenger car weighing 2t is required to accelerate at the rate of  $3.2 \text{ m/s}^2$  from a speed of 15 KMPH on a gradient of + 1.00% on WBM road surface assuming that frontal area of car is 2.1 m<sup>2</sup>, Calculate the engine Horse Power needed for running speed of 40 KMPH (Take F = 0.025, Ca = 0.39)

## OR

- **2.** a) Explain in detail various vehicular characteristic. How do they affect in design.
  - b) Analyse following spot speed data and find
    - i) Lower & upper speed limit
    - ii) Medium speed
    - iii) Design speed

Speed Group	Frequency
KMPH	
14 - 18.9	2
19 - 23.9	4
24 - 28.9	17
29 - 33.9	20
34 - 38.9	29
39 - 43.9	9
44 - 48.9	4
49 - 53.9	3

- **3.** a) Explain following terms :
  - i) Traffic 3 E's
  - ii) LOS & capacity analysis
  - iii) Motor vehicle act

6

6

8

8

- The consolidated data collected from speed and delay studies by floating car method on b) stretch of urban road length of 3.5 km, running N-S are given below. Find :
  - running speed of traffic stream along each direction i)
  - ii) Journey speed
  - iii) Average value

Trip	Direction	Journey	Total	No. of vehicle		No. of vehicle
No.	of Trip	Time	delay	Overtaking	Overtaken	from opposite
		min-sec	min-sec			direction
01	N-S	6 - 48	1 - 50	3	7	270
02	S-N	7 - 20	1 - 40	4	3	190
03	N-S	7 - 10	1 - 30	5	3	290
04	S-N	7 - 40	2 - 10	3	1	220
05	N-S	6 - 10	1 - 30	3	6	270
06	S-N	8 - 00	2 - 30	2	2	190
07	N-S	6 - 32	1 - 50	2	5	320
08	S-N	7 - 42	1 - 30	3	2	190

#### OR

4.	a)	a) Explain Rotary Intersections lists its advantages and disadvantages.	
	b)	Explain with neat sketches Bus stop location and Bus bay design.	8
5.	a)	Illustrate with sketches the basic traffic maneuvers and mention the significance of each in traffic flow.	8
	b)	The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour the saturation flow values on these roads 0 estimated as 1300 and 1100 PCU per hour respectively. The all red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method.	8
		OR	
6.	a)	Enlist various types of traffic signs and write in detail about general principles of traffic sign standards.	8

- b) Explain basic capacity flow with neat sketch. Determine the capacity flow for traffic lane 8 at a speed of 60 kmph and Jam density is 145 vehicle / km.
- 7. Explain collision diagram. a)
  - The accident data pertaining to a metropolitan city for the year 2000 to 2005 are as below. b) 8

	2000	2005
No. of accident	180	250
Vehicle km of travel	200 million	250 million

Test whether there is any significant increase in the accident rates.

#### OR

8. Explain and design of road lighting at different road sections & intersections. a)

4.

8

8

	b)	What are different types of traffic islands. Explain with neat sketch.	8
9.	a)	State various problems due to urban traffic & explain how these can be tackled in metro cities.	8
	b)	What are the various types of parking facilities for traffic needs & compare on street parking with off street parking.	8

### OR

\*\*\*\*\*\*

16

**10.** Explain following terms **any four.** 

- i) PUC
- ii) Pollution standard for auto vehicles.
- iii) Motor vehicle act
- iv) Conflict point
- v) Relationship between speed flow and density.