



B.E / B.Tech DEGREE END SEMESTER EXAMINATIONS, April 2011

CIVIL ENGINEERING BRANCH

EIGHTH SEMESTER

CE 523 – TRAFFIC ENGINEERING & MANAGEMENT

(REGULATIONS 2004)

Time: 3 Hrs

Max Marks: 100

16

ANSWER ALL THE QUESTIONS

Part A (10 x 2 = 20 Marks)

1. Write a short note on Power to Weight Ratio of vehicles
2. What is meant by 'Peripheral vision'?
3. List the survey methods practiced to understand OD pattern of commuters in a city.
4. Write the relationship between space mean speed and time mean speed.
5. What do you understand by the term "weaving"?
6. List the factors influencing clearance amber time duration of traffic signals.
7. Draw a diagram to indicate the probable points of Conflicts at a T Junction.
8. Suggest two methods for dissipating noise in residential areas.
9. When would you suggest to install warning signs on the road network? Give two examples.
10. Where and when would you suggest 'reversible lanes'?

PART B (5X 16= 80 Marks)

11. (a) i) List the major air pollutants found in vehicle exhaust and indicate the health impacts of each pollutant on human beings. [8 marks]
- ii) Human failure is the major cause for road accidents. Explain briefly the human aspects that on failure lead to accidents and suggest the precautionary measures required to avoid accident occurrence. [8 marks]
12. (a) i) Explain briefly the acceleration characteristics of vehicles. [8 marks]
- ii) Describe briefly the PIEV theory in determination of reaction time. [8 marks]

(OR)

- (b) i) Explain the influence of vehicle dimensions on various elements of road geometrics [8 marks]
- ii) Calculate the clearance amber time required at a 4 arm intersection where two roads of 21 metres width cross each other if:

The design speed is 60 kmph , $f = 0.35$, reaction time of drivers is 2.5 seconds and the length of cars using the section is 6 metres. [8 marks]

13. (a) i) Explain briefly how Parking Survey by Patrol method is conducted and the parking demand is assessed. [8 marks]
- ii) For the given Spot speed data observed at a section of highway, compute the speed limits [8 marks]

Vehicle No:	Speed in Kmph	Vehicle No:	Speed in Kmph	Vehicle No:	Speed in Kmph	Vehicle No:	Speed in Kmph	Vehicle No:	Speed in Kmph
1	34.8	11	41.2	21	45.2	31	48.0	41	49.0
2	35.1	12	41.8	22	45.4	32	48.2	42	49.1
3	36.3	13	42.1	23	45.4	33	48.3	43	49.1
4	36.8	14	42.8	24	45.7	34	48.3	44	49.2
5	37.1	15	43.3	25	45.8	35	48.4	45	49.5
6	38.3	16	44.0	26	45.9	36	48.5	46	49.5
7	39.0	17	44.3	27	46.1	37	48.6	47	49.5
8	40.3	18	44.6	28	46.8	38	48.6	48	49.8
9	40.8	19	44.7	29	47.1	39	48.7	49	50.1
10	41.1	20	45.0	30	47.8	40	48.8	50	50.2

(OR)

- (b) i) Explain briefly a method adopted to assess the origin destination of vehicular traffic entering and leaving a study town. [8 marks]
- ii) Compute the space mean speed and time mean speed if five cars are moving on a circular race track of 4 kilometres length at a speed of 48, 56, 64, 72 and 80 Kmph respectively. [8 marks]
14. (a) i) With a neat diagram of a four arm rotary intersection and the traffic movements explain how capacity of a section is computed. [6 marks]
- ii) A traffic signal is to be installed at an intersection where two six lane divided roads intersect at right angles The peak hour traffic flow observed is as follows:

Name of the Arm feeding traffic to the Intersection	Traffic Flow in PCUs/hour		
	Left	Straight	Right
North	360	706	306
East	411	625	392
South	347	730	284
East	426	597	421

Design the Phasing Pattern and green time for each phase. (10 Marks)

(OR)

- (b) i) List the advantages and benefits of having traffic Signal Co-ordination on major routes in an urban area. [6 marks]
- ii) A rotary is proposed in a rural area at a location where two four lane divided roads meet each other. The peak hour traffic flow is as follows:

Name of the Arm feeding traffic to the Intersection	Traffic Flow in PCUs/hour		
	Left	Straight	Right
North	450	650	250
East	550	490	300
South	475	400	390
East	390	500	450

Design a rotary for the intersection. [10 marks]

15. (a) i) Write a brief note describing the advantages of having exclusive bus lane and indicate when it is recommended. [8 marks]
- ii) Explain briefly the strategies adopted to avoid right turning at intersections. [8 marks]

(OR)

- (b) i) Explain briefly any two methods of travel demand management which are adopted for discouraging travel. [8 marks]
- ii) With a neat sketch explain the use of any four prohibitory signals installed on Urban roads. [8 marks]