

(3 Hours)

[Total Marks: 80

- Note:**
- i. Q. No. 1 is **compulsory**
 - ii. Attempt **any 3** out of remaining 5
 - iii. Support all **theory and numerical** with neat sketch

1. Solve any four (20 M)
- A. Discuss on various traffic studies.
 - B. Explain various types of intersections.
 - C. Explain Basic, possible and practical capacity.
 - D. Explain various traffic system management.
 - E. What are factors affecting trip generation and attraction?
 - F. Discuss on vehicle operating cost.

2. A. Design 2 phase signal using Webster's method when only straight ahead traffic is permitted. Also draw phase diagram (08 M)

	N	S	E	W
Design Flow (q)	800	400	750	1000
Saturation Flow (s)	2400	2000	3000	3000

- B. Design street light for 18m wide road at NH. (06 M)
 - C. Explain Methods of O&D Survey (06 M)
3. A. What is gravity model? Discuss steps involved. (08 M)
- B. Select Project on basis of IRR (06 M)

Project	A	B
Investment	120cr	140cr
Years	Returns in cr	Returns in cr
1	15	35
2	25	35
3	32	35
4	40	35
5	48	35

- C. Derive equation for Q-K-V. (06 M)
4. A. Find which project to be selected from the following using NPV and B/C if I = 6.5% (08 M)

Project	A	B	C
Investment	100cr	100cr	100cr
Annual return 1	30	37.5	45
Annual return 2	35	37.5	40
Annual return 3	40	37.5	35
Annual return 4	45	37.5	30

- B. Explain any 1 method of carrying out parking survey. (06 M)
- C. Discuss on four stage modelling. (06 M)

5. A. Discuss how statistics helps in Traffic Engineering. If at an uncontrolled T-Junction passed experience indicates probability of vehicles arriving on the side found during 15 sec intervals and turning right into the main road is 1/5. Find probability that in a period of 1 minute, there will be 0, 1, 2, 3, 4 vehicles arriving and turning right. (08 M)

- B. With an example, explain average growth factor method. (06 M)
- C. Explain methods to determine PCU (06 M)
6. A. One lane out of 2 lane road is taken up for repair. Capacity of 2 lane road is 2000 veh/hr. if traffic flow is 1500 veh/hr at free section, find speed of queue generated at bottle neck. Assume headway of 8m at jam condition and maximum capacity at bottleneck is 1100 veh/hr. (08 M)
- B. Find the trip generation if population is 80000 for following table: (06 M)

Population (thousand)	Trip Generation
37	1000
40	1200
52	1600
58	1900
64	2200
80	?

- C. Explain ITS and its application. (06 M)