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**Department of Civil Engineering, NIT Hamirpur (H.P.)**
**End Term Examination-May-2023**

**Urban Transportation Planning CE 422**

Time: 180 minutes                                                Max Marks: 50

**Part-1 Questions 1-6 Carry 5 marks each**

**Q1.** Elaborate on the various steps of the transportation planning process and explain the interdependence of landuse and transportation.

**Q2.** Define modal split and explain the factors influencing the choice of mode of transportation.

**Q3.** Describe the various modes of public transportation concerning their operational characteristics in various urban cities of India.

**Q4.** Define ITS along with its fundamental goals. Describe AVL and ANPR systems taking up a case study.

**Q5.** Elaborate the various types of parking facilities installed in an urban area. Also, define the various statistics used in parking studies.

**Q6.** Describe the various design elements and capacity of a rotary intersection. What are the advantages and disadvantages of a rotary in comparison to a channelized intersection?

**Part-2 Questions 7-8 Carry 10 marks each**

**Q7.** Distribute the trips given using Fratar Method. The growth factors estimated for different zones over the 20-year design period are given below.

Zone: 1  2  3  4

G.F:  3  4  2  1

| O/D | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | - | 25 | 50 | 25 |
| 2 | 25 | - | 150 | 75 |
| 3 | 50 | 150 | - | 200 |
| 4 | 25 | 75 | 200 | - |

**Q8.** An urban area comprises four residential zones, A, B, C and D and two work zones, X and Y. The trips generated between these two zones are summarized as

A      B      C      D

1200  800  1050  750

Zone X has 2250 jobs, and zone Y has 3400 jobs, and it is known that the attraction between the zones is inversely proportional to the square of journey times given in the table below. Using the Gravity modal calculate and tabulate the interzonal trips from home to work.

| Zone | X | Y |
|---|---|---|
| A | 5 | 10 |
| B | 20 | 5 |
| C | 15 | 25 |
| D | 10 | 15 |