CEL 785 Major 2007-08

Max Marks 35 Duration 2 hrs

1. a. One of the major feature of EMME/2 software is the incorporation of multimodal equilibrium(ME). Explain ME, what are the major advantages of ME?

b. You have studied volume-delay relationships. Why and where is this used in the software?

c. What is the main output of EMME/2? How is it used in planning?

d. How will you compare existing and proposed network eharaeteristics using EMME/2? (8)

2. A survey of 151 commuters is conducted regarding the route selection for morning home to work trips. To analyze commuters' choice a MNL is estimated. Annex. 1 gives list of tables and MNL results. The estimated utility functions are:

V = -0.942(DISTA), V = 1.65-1.135(DISTT) + 0.128(VEHAGE),

V = -3.20-0.694(DISTF) = 0.233(VEHAGE) + 0.766(MALE)

a. Which is the baseline option?, All else being equal, which option is mot likely to be selected? Why does the distance parameter in all options have negative sign? Why are the values different in all three options? (3)

b. How can we test if effects of distance are different across all options?(3)

c. What is the marginal rate of substitution between distance and vehicle age on the two lane road based on the estimated model? Explain the meaning of the estimated value of MRS. (4)

3. a. A consultant has prepared a comprehensive traffic and transport plan for a city. You are asked to check the demand forecasts and various proposals for improvement. List how you would check the aecuraey of various stages of surveys, demand models, network assignments, and final recommendations.

b. A survey data shows that 80% of the trips are in public transport. Household data shows average trip lengths to be 3 kms. Are the two survey numbers compatible? Explain what is described by two surveys. 8

4. a. A number of assumptions must be met in order for the linear regression model parameters to be best linear unbiased estimates(BLUE). Explain the following violations, when ean they oecur and their effect on the model:

i. The assumption that the disturbance term has a mean of zero is violated. 1

ii.The assumption that thc disturbancc has constant variancc across obscrvations. 1

iii. What approaches can be used for correcting for heteroscedasticity? 1

5. Explain the following terms with example: (5)

a. All-or-nothing assignment
b. Load dependent and load independent congestion
e. Transient nature of congestion
d. Load factor at equilibrium
e. Mean squared error
f. Indicator variables