

1.

Please explain the following terms: (25%)

(a) sustainable development, (b) CBD, (c) zoning, (d) traffic calming, (e) BRT

2.

Please draw a diagram to illustrate the historic evolution of urban transportation network. You may use any transportation mode to show your answer. (25%)

3.

Does the urban development serviced by a new transportation facility influence land use patterns? You have to explain the interaction between land use and other uses as result of adding a new transportation facility. (25%)

4.

A market segment consists of 900 individuals. A multinomial logit mode choice model is calibrated for this market segment, resulting in the following utility function:

$$u = \beta_m - 0.50C - 0.01T$$

where C = out of pocket cost, dollars, and T = travel time, min.

Values of β_m are as follows: Bus transit = 0.00, Rail transit = 0.20, Auto = 2.40. For a particular origin-destination pair, the cost of an auto trip, which takes 12 min, is \$3.00. Rail transit trips, which take 20 min, cost \$2.00. Bus transit takes 40 min and costs \$1.25. Predict the number of trips from this market segment that use each mode. (25%)