Question 1: Question 1, page 459 of the text (Indiana roads...).

Question 2: Question 1, parts $a$ and $b$, page 471 of the text (truck; NY to LA...).

Question 3: Consider the following network, and suppose that the number adjacent to an arc represents the distance between the two nodes it connects. Use Dijkstra’s method to find the shortest path from node 1 to each of the other nodes in the network along with the associated distances. Show all your steps!

Question 4: Consider the data in Question 2, page 472 of the text. Suppose that currently a total of 600 calls are being sent from NY to LA via the following routing scheme: 100 calls from NY-Memphis-Dallas-LA; 500 calls from NY-Chicago, 250 from Chicago-Denver-LA and 250 from Chicago-Dallas-LA. Using this flow as a starting point, increase the total number of calls from NY-LA as much as possible via the Ford-Fulkerson algorithm and show what the optimal flows are. Verify that the final flow is optimal.

Question 5: Consider the following network where data is to be moved from node A (source) to node F (sink) of a computer network. Different links in the network have different capacities and the numbers in bold-face above each arc represent the maximum rate of flow possible along that arc. The numbers alongside in parentheses denote the current flow rate; if there are no such numbers it means that current flow along that arc is equal to zero. Starting with the current flow of 13 units, use the Ford-Fulkerson algorithm to find and verify the maximum flow possible from source to sink.