BRONX COMMUNITY COLLEGE
of the City University of New York
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

**CSI35 Section D02**   **Sample Quiz 4**

Instructions

Solve all problems and mark your answers clearly. Show all work, using additional paper if needed.

1. Generate a Huffman code for a message using the characters A, B, C, D and E if they have relative frequencies 0.4,0.25, 0.1, 0.1, and 0.15 respectively. Show the stages of merging the weights of trees to generate the bitstring codes. What is the average number of bits per character to code this message?

2. Give preorder, inorder, and postorder traversals of this tree, printing the labels of each vertex as it is visited:
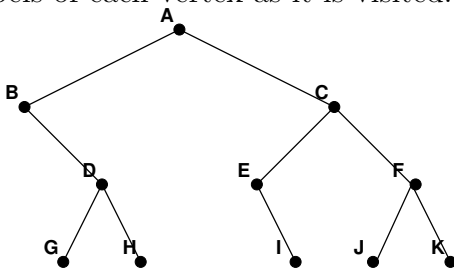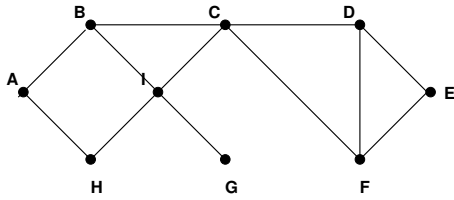

3. Using graph G, show the development of a spanning tree using breadth-first search, starting with the root of the tree and labeling each edge in the order it is added.
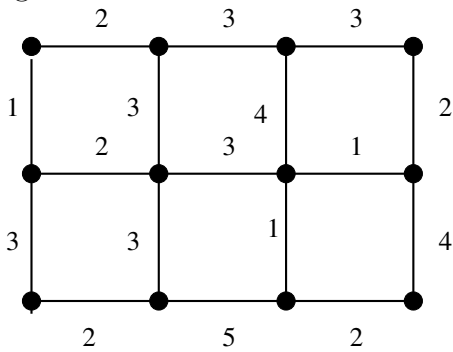   G:
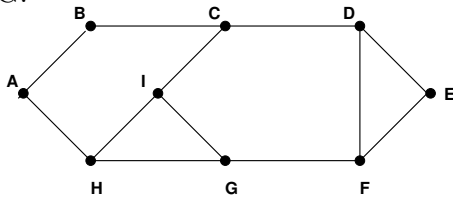
4. Using graph H, show the development of a spanning tree using depth-first search, starting with the root of the tree and labeling each edge in the order it is added.
H:

5. With this weighted graph, find a minimum-spanninng tree using Kruskal's algorithm:

6. A. Write the expression tree for the infix expression $(1 + 2) * (3 - 4) \uparrow 5$:

B. Using the tree, rewrite the expression in polish notation:

C. And now in reverse polish notation: