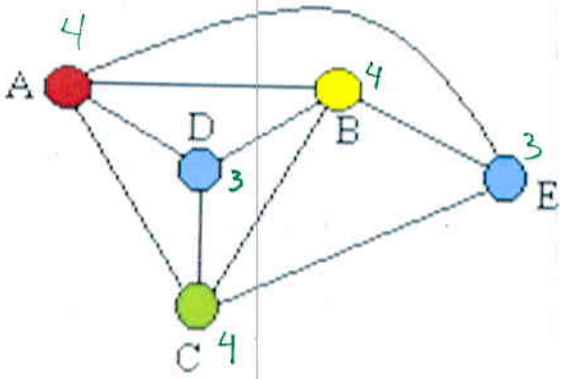
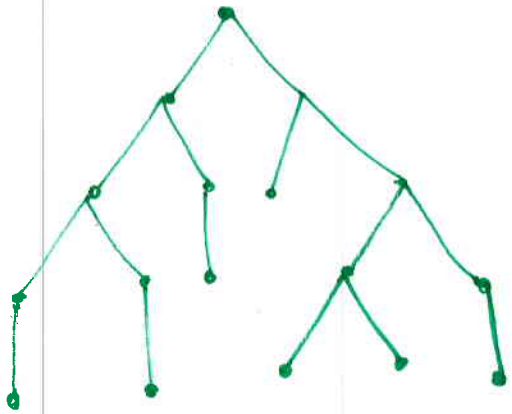
Math 2366, Quiz #14, Summer 2014 Name KEY

Instructions: Show all work. Justify answers as completely as possible. If you are asked to prove something, mere computation is not enough. You must explain your reasoning. Be sure to state your conclusion clearly. Incomplete work or justification will not receive full credit. Use exact answers unless specifically asked to round.

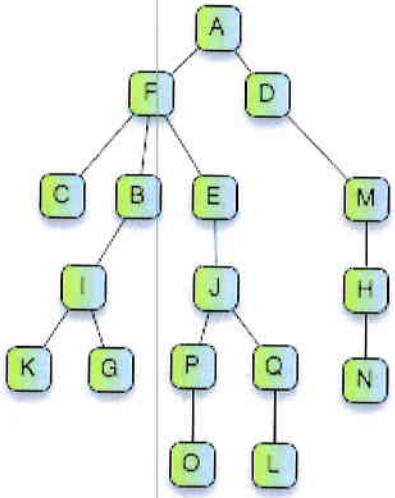
1. Use the graph below to determine the following:
   a. Is there an Euler circuit? no
   b. Is there an Euler path? [Hint: If there is a circuit, there is a path; but there may be a path even if there isn't a circuit.] yes
   c. Is there a Hamilton circuit? yes
   d. Is there a Hamilton path? [Hint: same note as in (b).] yes



2. Give an example of a rooted binary tree with a height of 4. (Draw it here.)



3. For the tree shown below, find the following vertices corresponding to each description.
   a. The root — A
   b. The sibling(s) of B — C, E
   c. The parent of M — D
   d. The child(ren) of J — P, Q
   e. All the ancestors of H — M, D, A
   f. All the descendants of C — none



4. Give the decision tree for the rest of the tic-tac-toe game shown here.