Consider a binary tree T whose preorder traversal and inorder traversal are as follows:

Preorder: +**/ABCDE
Inorder: A/B*C*D+E

Please show the postorder traversal of T. (10%)

(2) Give a definition for binary search tree. (5%) Which of the following binary trees (See Fig.1) is a binary search tree? (5%)

(3) What is the Euler cycle of a graph? (5%) Do the following graphs (see Fig.2) contain an Euler cycle? If so, show the cycle. (5%)

(4) Use the C++ or other high level programming languages to implement the quick sort algorithm. (7%) What is the average time complexity of quick sort? (3%) Suggest one way to improving the running time of quick sort. (5%)
(5) Show the Prim’s algorithm for finding the minimum cost spanning tree in C++ or other high level programming languages. (8%) Show the result of Fig. 3 by using the Prim’s algorithm. (7%)

Fig. 3

(6) What are the process deadlock problem and starvation problem in operation system? (6%) What are the necessary conditions which are in effect for a deadlock to exist? (4%)

(7) Explain the protocols defined in TCP/IP. (5%) Compare the TCP/IP layers with OSI network model. (5%) Discuss the advantage and disadvantage of having one application layer in the TCP/IP protocol suite instead of three layers (i.e. session, presentation, and application) as in the OSI model. (5%)

(8) Let $a$ and $b$ be two polynomials represented as linked lists with head nodes. Write an algorithm to compute the subtraction polynomial $c = a - b$. Your program should leave $a$ and $b$ unaltered. (15%)