1. (10%) A Boolean function can be represented in a truth table. Please show the truth table for the following function:

\[ F = X + \overline{Y} X. \]

2. (10%) Please explain and compare the following two terms in the field of Cryptography: public key and private key.

3. (20%) Please explain how the following four kinds of technologies affect the development of communication technologies:
   (1) network technologies;
   (2) multimedia technologies;
   (3) wireless communication technologies;
   (4) virtual reality technologies.

4. (10%) Figure 1 is a directed graph \( G \). Figure 2 is its corresponding adjacency-structure representation. Please write down the depth-first search traversal order and breadth-first search traversal order of this graph.

![Figure 1. Graph G.](image1)

![Figure 2. Adjacency-structure representation of graph G.](image2)
5. (20%) Please explain in brief the following terms:
   a) HTTP
   b) HTML
   c) XML
   d) Firewall
   e) TCP/IP

6. (20%) Please write a program in any high level language to sort n integers with quick sort algorithm.

7. (10%) Please describe the operation principle of a relational DBMS.