

- _____ 20. The _____ layer can create an error-free message pipe. (A) physical (B) data link (C) network (D) transport
- _____ 21. What device can connect two different LANs?
(A) bridge (B) hub (C) router (D) modem

II. Multiple Choices – 複選題 (8%; 4 %/question)

- _____ 1. Sort the following network speed from the fastest. to the slowest
(A) Giga-bit Ethernet (B) ADSL (C) Ethernet (D) dial-up phone line
- _____ 2. Sort the following devices according to their speed from the fastest to the slowest.
(A) RAM (B) cache (C) register (D) hard disk

III. Questions and Answers – 問答題 (50 %)

1. (12%) Explain the following terms: (1) USB (2) W3C (3) FFT (4) Dynamic Programming
2. (10%) Consider the following section of code:

```
main(){
    int i=1;
    int ret_val = 1;
    while(i <= 2)
        if (ret_val == 0) {
            printf("In child %d. \n", i);
            exit(0);
        } else {
            fork();
            printf("In parent %d. \n", i);
            i = i + 1;
        }
}
```

- (1) (5%) Assume that the fork() system call is successful. How many processes will be created when the code is executed?
- (2) (5%) What will be printed?
3. (10%) Write a program that reads n to generate a board of n by 2n and randomly fills pairs of numbers from 1 to n. There should be no duplicate pair of numbers.
4. (8 points) Write the result after executing the following program.

```
int sub (int *a, int *b) {
    *a *= 2;
    printf("a = %d, b = %d.\n", *a, *b);
    return ++*a * *b--;
}
```

```
int func (int a, int b) {
```