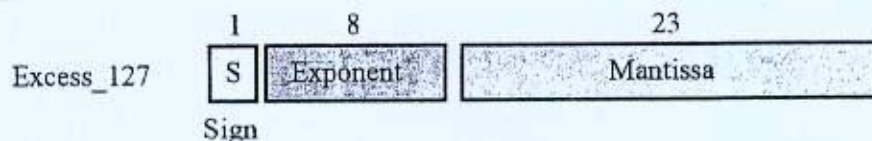●不可使用電子計算機

Part 1: Multiple choice (40 %). Each correct answer is worth 4 pts.

1. The _____ layer of the TCP/IP protocol suite is responsible for node-to-node delivery if a frame between two adjacent nodes.

   (a) Transport　　(b) Network　　(c) Data-link　　(d) session

2. The _____ layer of the OSI model is responsible for source-to-destination delivery of the entire message.

   (a) transport　　(b) network　　(c) data-link　　(d) session

3. The _____ layer of the OSI model is responsible for source-to-destination delivery of an individual packet.

   (a) transport　　(b) network　　(c) data-link　　(d) session

4. A _____ is a connecting device that acts as a protocol converter.

   (a) repeater　　(b) bridge　　(c) router　　(d) gateway

5. When we want to store music in a computer, the audio signal must be _____.

   (a) Sampled　　(b) quantized　　(c) coded　　(d) all of the above

6. In _____, the program can be divided into differently sized sections.

   (a) partitioning　　(b) paging　　(c) demand paging　　(d) demand segmentation

7. _____ is multiprogramming with swapping.

   (a) Partitioning　　(b) Paging　　(c) Demand paging　　(d) Queuing

8. Find the minimum number of required bits to store the integer 100,000.

   (a) 14 bits　　(b) 15 bits　　(c) 17 bits　　(d) 19 bits

9. If we have a 4-bit pattern to represent the digits 0 to 9, how many bit patterns are wasted.

   (a) 4　　(b) 6　　(c) 8　　(d) 10

10. In the _____ method for synchronizing the operation of the CPU with an I/O device, the I/O device informs the CPU when it is ready for data transfer.

    (a) programmed I/O　　(b) interrupt-driven I/O　　(c) DMA　　(d) Isolated I/O

Part 2: Short problems (60 %).

11. **(10 pts)** Change the following 8-bit two's complement numbers to decimal.
    (a) 01110111 (5 pts)
    (b) 11111100 (5 pts)

12. **(12 pts)** Using the **hexadecimal** notation to show the number -7.625 in 32-bit IEEE Excess_127 format.

	1	8	23
Excess_127	S	Exponent	Mantissa
	Sign		

13. **(4 pts)** Find how many times the statement in the following code segment in C is executed:

```c
for(int i = 5; i < 20; i++) {
    Statement;
    i = i + 1;
}
```

14. **(6 pts)** Change the following segment of code to use a switch statement:

```c
if(A == 4) statement1;
else
    if(A == 6)statement 2;
    else if(A == 8)statement 3;
```

15. **(16 pts)** A multiprogramming operating system uses paging. The available memory is 60 MB divided into 15 frames, each of 4 MB. The first program needs 13 MB. The second program needs 12 MB. The third program needs 27 MB.

   (a). How many frames are used by the first program? (4 pts)

   (b). How many frames are used by the second program? (4 pts)

   (c). How many frames are unused? (4 pts)

   (d). What is total memory wasted? (4 pts)

16. **(6 pts)** Decode the message 0101000011110 using the following Huffman code:

   A: 0　　**B: 10**　　**C:11**

17. **(6 pts)** A computer has 64MB (megabytes) of memory. Each word is 2 bytes. How many bits are needed to address each single word in memory?

100009