

招生學年度	104	招生類別	碩士班
系所班別	資訊工程學系碩士班(資工乙組)		
科目名稱	計算機概論		
注意事項	本考科禁止使用掌上型計算機		

1. Describe how a process might move through the various process states. Cite specific reasons why this process moves from one state to another. (10%)

2. The following table is the service time of five processes.

Process	P1	P2	P3	P4	P5
Service time	120	60	180	50	300

(1) Draw a Gantt chart that shows the turnaround times for each process using first-come, first served CPU scheduling. (5%)

(2) Draw a Gantt chart that shows the turnaround times for each process using shortest-job-next CPU scheduling. (5%)

3. Distinguish between the following LAN topologies: ring, star, and bus. (10%)

4. Cloud computing is a service through which you can obtain storage space, automatic synchronization of devices, and access to other resources on the Internet. Please explain the terms: public cloud, private cloud, and hybrid cloud. (10%)

5. What is the primary difference between IPv4 and IPv6 protocols? (5%)

6. How does a man-in-the-middle attack work? (5%)

7. For questions (1) to (5), choose the answers from the following: (2% each)

- A. Babbage
- B. Byron
- C. Hollerith
- D. Jacquard
- E. Leibniz
- F. Lovelace
- G. Pascal
- H. Turing

(1) What French mathematician built and sold the first gear-driven mechanical machine that did addition and subtraction?

(2) Who built the first mechanical machine that did addition, subtraction, multiplication, and division?

(3) Who designed the first mechanical machine that included memory?

(4) Who was considered the first programmer?

(5) Who proposed that a punched card be used for counting the census?

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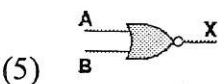
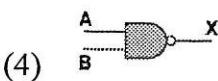
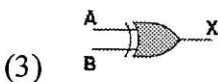
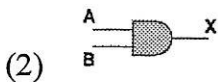
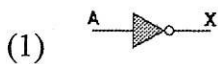
8. Consider a number 671, which we do not know its base; in other words, we do not know if it is decimal, hexadecimal, or octal. Compute and answer the following questions. (5% each)

- (1) What is its value if it is of base 8?
- (2) What is its value if it is of base 16?

Huffman Code	Character
00	A
11	E
010	T
0110	C
0111	L
1000	S
1011	R
10010	O
10011	I
101000	N
101001	F
101010	H
101011	D

9. Given the above Huffman encoding table, decipher the bit string 10100010010101000100011101000100011. (10%)

10. Give the Boolean expression denoted by each logic diagram symbol in the following. (2% each)



11. What is the von Neumann architecture of computers? List the major components in the von Neumann architecture. Hint: Drawing a figure of the von Neumann architecture is recommended. (10%)