

國立臺北科技大學九十八學年度碩士班招生考試

系所組別：1522 自動化科技研究所乙組

第二節 計算機概論 (選考) 試題

第一頁 共一頁

注意事項：

1. 本試題共 5 題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1.(40%) Please explain: (每小題 5 分)

- (1) RISC
- (2) Cache memory
- (3) RTOS
- (4) SoC
- (5) RAID
- (6) WLAN
- (7) Semaphore
- (8) Mutex

2.(10%) There are three types of methods for transferring data between an I/O device and memory. (每小題 5 分)

- (1) Compare the three types of methods: polling, interrupt driven and DMA.
- (2) Rank the three techniques in terms of lowest impact on processor utilization.

3.(15%) The most common representation today for real numbers on computers: (每小題 5 分)

- (1) Explain the IEEE 754 standard.
- (2) What is the IEEE 754 representation of 32-bit integer binary format of a signed decimal number, -300 ?
- (3) What is the IEEE 754 representation of 32-bit floating point binary format of a signed decimal number, -29.75 ?

4.(15%) We have the following statistics for two processors P1 and P2 (they have the same classes of instructions): (每小題 5 分)

P1: 200 MHz

Instruction class	CPI	Frequency (occurrence freq. of the instruction class)
A	5	25%
B	2	40%
C	3	35%

P2: 250 MHz

Instruction class	CPI	Frequency(occurrence freq. of the instruction class)
A	3	40%
B	3	35%
C	4	25%

- (1) Calculate the average CPI for the two processors.
- (2) What is "MIPS"? Calculate the MIPS rating of P1 and P2 respectively.
- (3) Which machine is faster? How much faster?

5.(20%) Given the following input data in order:

26, 5, 8, 10, 40, 90, 60, 70, 2

Please construct the: (每小題 5 分)

- (1) AVL tree.
- (2) 2-3 tree.
- (3) Deap.
- (4) Red-Black Tree.