

國立臺北科技大學 103 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

第三節 計算機概論 試題 (選考)

第一頁 共二頁

注意事項：

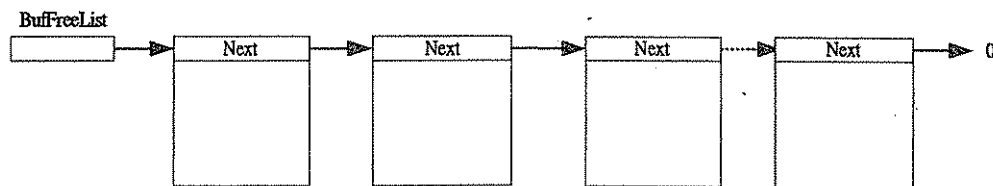
1. 本試題共六題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1.(24%) Please explain:

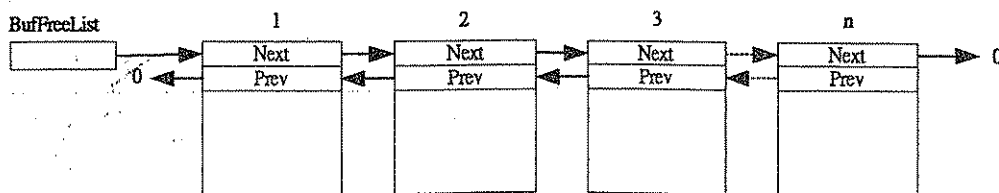
- (1) (3%) RISC/ CISC
- (2) (3%) DMA
- (3) (3%) Deadlock
- (4) (3%) Embedded System
- (5) (3%) RAID
- (6) (3%) WLAN
- (7) (3%) Scheduler (for operating system)
- (8) (3%) Mutex

2.(20%) A list is an important data structure. Please define your own data structure and finish the following operation with pseudo code.

(1)(5%)Creat a singly linked list ◦



(2)(5%)Creat a doubly linked list ◦



(3)(5%)In single linked list, remove a node and add a node.

(4)(5%)In doubly linked list, remove a node and add a node.

- 3.(12%) There are situations in pipelining when the next instruction cannot execute in the following clock. These events are called “hazards”. Please list and explain those “hazards”.
- 4.(12%) Show the IEEE 754 binary representation of the number -0.75_{ten} in single and double precision.
- 5.(16%) A compiler designer is trying to decide between two code sequences for a particular machine. The hardware designers have supplied the following facts:

Instruction class	CPI for this instruction class
A	1
B	2
C	3

For a particular high-level-language statement, the compiler writer is considering two code sequences that require the following instruction counts:

Code sequence	Instruction counts for Instruction class		
	A	B	C
1	2	1	2
2	4	1	1

Which code sequence executes the most instructions? Which will be faster? What is the CPI for each sequence?

注意：背面尚有試題

6.(16%) There are four steps in transforming a C program in a file on disk into a program running on a computer. The following figure shows the translation hierarchy. Please fill in the four phases (1), (2), (3) and (4) that all programs go through. And explain each phase in detail.

