

國立臺北科技大學 104 學年度碩士班招生考試

系所組別：2300 資訊工程系碩士班

第二節 計算機概論 試題

第一頁 共二頁

注意事項：

1. 本試題共五題，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。

一. Short answer questions. (40%)

1. Name and describe three disk scheduling algorithms. (9%)
2. Use the state of memory below. If the partitions are dynamic and a new job arrives requiring 63 blocks of main memory, show memory after using each of the following partition selection approaches: (1) First fit, (2) Best fit, (3) Worst fit. (9%)

Operation System
Process 1
Empty 75 blocks
Process 2
Empty 65 blocks
Empty 80 blocks
Empty 200 blocks

3. Answer the following questions: (6%)

Process	P1	P2	P3	P4	P5
Service time	60	80	110	30	160

- (a) Given the above service times, draw a Gantt chart showing process scheduling using the first-come, first-served algorithm. (3%)
- (b) What is the average waiting time using the first-come, first-served algorithm. (3%)

4. Please draw the process life cycle of the CPU scheduling. The states of the CPU scheduling includes New, Terminated, Waiting, Ready, and Running. (6%)

5. Answer the following questions about cloud computing: (10%)

(1) Virtualization is the first step towards building a cloud infrastructure. Please give three types of visualization of the data center. (3%)

(2) What is the Hypervisor? (3%)

What are the features of big data? (4%)

二. The 32-bit IEEE 754 floating-point format consist of one sign bit, 8 exponent bits coded with excess-127, and 23 mantissa bits (represented by implicit 1 convention). (16%)

1. Represent the decimal number 0.375 by IEEE 745 (32 bit) floating-point format. (8%)

2. Follow the standard floating-point arithmetic used in most computers to compute 0.375×0.375 with a step-by-step explanation. (8%)

三. A new CPU intends to use a four-stage instruction pipeline to achieve the speed of one instruction per cycle. (16%)

1. What problems may arise if using such a strategy? (8%)

2. A special instruction called "delayed branch" is also included in the instruction set.

Explain how this instruction works and how it is related to your answer in part (1).

(8%)

四. Answer or explain the following terms: (16%)

1. What is the meaning of VLISM? (4%)

2. What is the meaning of flow control? (4%)

3. Please define the Network topology. (4%)

4. What is the meaning of LAN? Please give the property of it. (4%)

注意：背面尚有試題

五. Answer the following questions: (12%)

1. For the WLAN standards: IEEE 802.11a, 802.11ac, 802.11b, 802.11g, and 802.11n, please give the descending order list of them in terms of transmission speed (i.e., data rate).
(3%)
2. Please identify the following illegal IP address(es) that cannot be routed:
①169.254.110.110, ②195.168.0.157, ③65.45.23.1, ④200.2.4.255, and ⑤141.122.3.6.
(3%)
3. Give the name of Internet 4-layer protocol stack and briefly describe their main role played in communications. (3%)
4. Describe the operation of CSMA/CD protocol. (3%)