

國立高雄科技大學 108 學年度碩士班 招生考試 試題紙

系所別：資訊工程系碩士班

組別：不分組

考科代碼：1082

考科：作業系統

注意事項：

- 1、各考科一律可使用本校提供之電子計算器，考生不得使用自備計算器，違者該科不予計分。
- 2、請於答案卷上規定之範圍作答，違者該題不予計分。

1. (10%) Assume we have three kinds of resources, 2 disks, 2 printers, and 1 graphic display. Consider there are three processes, P1, P2, and P3, and we have allocated one disk for P1, one disk and one printer for P2, and one graphic display for P3. Assume P1 still need one printer, P2 need one graphic display, and P3 need one disk. Please provide a scheduling sequence that three processes could be completed.

2. (20%) Please explain the following terms as details as possible:

- (a) Critical section
- (b) Thrashing
- (c) Internal fragmentation
- (d) Threads
- (e) Virtual memory

3. (20%) Consider the following processes with the length of the Arrival Time and Burst Time.

Process	Arrival Time	Burst Time
P1	0	20
P2	0.8	15
P3	1.5	5

- (a) What is the turnaround time of P1 using FCFS?
- (b) What is the turnaround time of P2 using Preemptive SJF?
- (c) What is the waiting time of P1 using FCFS?
- (d) What is the waiting time of P1 using Preemptive SJF?
- (e) What is the waiting time of P3 using Round-Robin (quantum=3)?

4. Please answer the following questions in detail.

- (8%) (a) What is the necessary condition for deadlock?
- (6%) (b) Please describe the deadlock recovery.

5. Please answer the following questions in detail.

(3%) (a) What is the logical address?

(9%) (b) Please describe the logical address for Paging scheme, Segmentation, and Segmentation with Paging.

6. Assume there is a process with the size of 500 bytes. The order of accessing the memory address is as follows:

10, 12, 103, 150, 73, 330, 160, 220, 224, 420, 480, 354.

(4%) (a) If the page size is 100 bytes, what is the page reference string?

(8%) (b) Assume the available memory size is 200 bytes and all frames are initially empty. How many page faults would be occurred for **LRU** and **FIFO** replacement algorithm?

7. A computer system has a 32-bit virtual address space with a page size of 8K, and 4 bytes per page table entry.

(4%) (a) How many pages are in the virtual address space?

(4%) (b) What is the maximum size of addressable physical memory in this system?

8. (4%) Please explain the difference between Trap and Interrupt.