國立彰化師範大學104學年度碩士班招生考試試題

系所：資訊工程學系　　選考丙　　科目：作業系統

☆☆請在答案紙上作答☆☆　　

一、What is the purpose of interrupts? What are the differences between a trap and an interrupt? Can traps be generated intentionally by a user program? If so, for what purpose? **(12%)**

二、Describe three general methods for passing parameters to the operating system. **(10%)**

三、Is it possible to have concurrency but not parallelism? Explain. **(7%)**

四、Explain the differences in how much the following scheduling algorithms discriminate in favor of short processes: **(10%)**

a. First-Come First- Served　b. Round-Robin　c. Multilevel feedback queues

五、A solution to the critical-section problem must satisfy three requirements. What are the three requirements? **(7%)**

六、Consider the version of the dining-philosophers problem in which the chopsticks are placed at the center of the table and any two of them can be used by a philosopher. Assume that requests for chopsticks are made one at a time. Describe a simple rule for determining whether a particular request can be satisfied without causing deadlock given the current allocation of chopsticks to philosophers. **(10%)**

七、What is the purpose of paging the page tables? **(7%)**

八、Assume a program has just referenced an address in virtual memory. Describe a scenario how each of the following can occur: (If a scenario cannot occur, explain why.)

a. TLB miss with no page fault **(3%)**　b. TLB miss and page fault **(3%)**

c. TLB hit and no page fault **(2%)**　d. TLB hit and page fault **(2%)**

九、Some systems automatically open a file when it is referenced for the first time, and close the file when the job terminates. Discuss the advantages and disadvantages of this scheme as compared to the more traditional one, where the user has to open and close the file explicitly. **(10%)**

十、Fragmentation on a storage device could be eliminated by recompaction of the information. Typical disk devices do not have relocation or base registers (such as are used when memory is to be compacted), so how can we relocate files? Give three reasons why recompacting and relocation of files often are avoided. **(10%)**

十一、Explain why solid-state disks often use a first-come first- served disk scheduling algorithm. **(7%)**