國立彰化師範大學103學年度碩士班招生考試試題

系所：　　　資訊工程學系(選考丙)、
　　　　　資訊工程學系積體電路設計碩士班(選考己)　　　　科目：　　作業系統

☆☆請在答案紙上作答☆☆

1. Explain the following terms. (50%)

   a. Round-Robin scheduling algorithm　　　　**b**. Deadlock avoidance

   c. Semaphore　　　　　　　　　　　　　　**d**. Process control block

   e. System call　　　　　　　　　　　　　　**f.** Translation look-aside buffer

   g. Thrashing　　　　　　　　　　　　　　　**h.** File system mounting

   i. Solid-state disk　　　　　　　　　　　　**j.** Breach of confidentiality

2. What are the advantages and disadvantages of supporting memory-mapped I/O to device-control registers? (10%)

3. Compare paging with segmentation with respect to the amount of memory required by the address translation structures in order to convert virtual addresses to physical addresses. (10%)

4. Describe the actions taken by a kernel to context-switch between processes. (10%)

5. Discuss the relative advantages and disadvantages of sector sparing and sector slipping. (10%)

6. Consider a preemptive priority scheduling algorithm based on dynamically changing priorities. Larger priority numbers imply higher priority. When a process is waiting for the CPU (in the ready queue, but not running), its priority changes at a rate α; when it is running, its priority changes at a rate β. All processes are given a priority of 0 when they enter the ready queue. The parameters α and β can be set to give many different scheduling algorithms.

   a. What is the algorithm that results from $\beta > \alpha > 0$? (5%)

   b. What is the algorithm that results from $\alpha < \beta < 0$? (5%)