### Chapter 3: Process

### **一、单选题**

1. One essential difference between a process and a program is ( D ).
2. The former uses CPU in timesharing mode , and the latter monopolize CPU.
3. The former is stored in buffer, and the latter is stored in the storage.
4. The former is in a file, and the latter is in multiple files.
5. The former is dynamic and the latter is static.
6. A process is in a waiting state because of the need to read data from the disk. When the system completes the desired read disk operation, the state of the process will be ( B ).
7. Running
8. Ready
9. Waiting
10. Terminated
11. PCB（process control block）is a data structure that describes the state and characteristics of a process, a process ( D ).
12. can have multiple process control blocks.
13. can share a process control block with other processes.
14. can run without process control block.
15. can have only a unique process control block
16. Because the time slice is used up（用完）, the process state changes to （ A ） state.
17. ready
18. waiting
19. running
20. terminated
21. The operating system manages the process through ( B ).
22. JCB
23. PCB
24. DCT
25. CHCT
26. When the process has been allocated to all the necessary resources except ( A ), it is called the ready state.
27. processor（处理器）
28. control bus
29. memory
30. I/O equipment
31. If there are n processes in the system, the largest number of processes in the ready queue should be ( C ).
32. n+1
33. n
34. n-1
35. 1
36. A process includes ( D ).
37. PCB
38. program and data
39. PCB, and data
40. PCB, program, and related data segments
41. In a **single processor**（单处理机） system, at most ( A ) process (or processes) is (or are ) in running state.
42. one
43. two
44. three
45. more than one
46. which system call can create a new process in Linux? （A）
47. fork()
48. execlp()
49. wait()
50. exit()

11、When a task needs several processes to complete together, a certain amount of information needs to be exchanged between processes, which is called ( B ).



A. Process wakeup

B. process communication

C. Process mutual exclusion

D. process synchronization

12. When the indirect communication mode of message passing is adopted between processes, the send() stores the sender's letter in ( A ).

A. Mailbox

B. message buffer

C. Receiver's PCB

D. designated workspace

### **二、填空题**

1. The process has at least 3 basic states, they are \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_. ready running waiting（or block）
2. The full name of PCB is \_\_\_\_\_\_\_\_\_\_. Process Control Block
3. In a single processor system if the system has 100 processes, the number of processes in the ready queue up to \_\_\_\_\_\_\_\_\_\_, the process of running state will be up to \_\_\_\_\_\_\_\_\_, the process of waiting state will be up to\_\_\_\_\_\_\_\_\_\_. 99 1 100
4. When the operating system is ready to accept a process, it converts the process from new state to \_\_\_\_\_\_\_\_\_\_ state. ready
5. Operating system manages the processes through the \_\_\_\_\_\_\_\_\_\_, it is the only existing identifier of a process. PCB

### Chapter 4: Thread

### **判断题**

1、Threads cannot execute concurrently.（F）

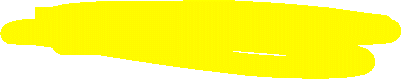
2、Thread is the unit of resource allocation.（F）

3、Thread is the unit of CPU scheduling.（T）

4、In the multi-threads system, process is still the basic unit of resource allocation and CPU scheduling.（F）

1. Thread keep the advantage of concurrency and reduce the cost of process switching.（T）
2. In the multi-threads system, process is the owner of resources, but not the basic unit of scheduling. （T）

7、Thread is an execution trace in a process, thread is the basic unit of independent scheduling and dispatching.（T）



### Chapter 5: CPU Scheduling

### **一．单选题**

1. The FCFS scheduling algorithm gives priority to process ( B ) to run.

A. has the longest running time.

B. has the longest waiting time.

C. has the shortest running time.

D. has the shortest waiting time.

2. In the following scheduling algorithm, ( C ) algorithm is fair for all ready processes. A. FCFS B. SPF

C. RR (time slice rotation method) D. HRRN

3. The following scheduling algorithm that needs to estimate（估计） the execution time of the process is ( B ).

A. FCFS B. HRRN

C. RR D. multilevel feedback queuing scheduling algorithm

4. Which of the following scheduling determines the multiprogramming degree of the system? ( A )

A. long-term scheduling

B. medium-term scheduling

C. short-term scheduling

D. process scheduling

5. The most frequently executed mode of scheduling is ( C ).

A. long-term scheduling B. medium-term scheduling

C. short-term scheduling D. job scheduling

6. The scheduling of **preemption（抢占式）** means that the current running process is interrupted by the operating system and transferred to ( C ) state.

A. blocking state B. new state

C. ready state D. hangs

7. When a time slice is longer than the process with the longest execution time, the RR scheduling algorithm is degraded ( B ).

A. HRRN B. FCFS

C. SPF D. multilevel feedback queuing scheduling algorithm

8. If the response ratio of a process in a system is highest, the process has ( D ).

A. the longest running time

B. the longest waiting time

C. the longest turnaround time

D. the maximum of ratio of the waiting time to the running time

9. For a new arrived process, the **response ratio** should be ( B ).

A. 0 B. 1

C. 2 D. infinite

10. In the FCFS scheduling algorithm, which of the following processes run better ( A ). A. the process reached early

B. the short process of arriving late

C. a short process after a long process

D. the long process of arriving late

11. When scheduling with the RR algorithm, two time slices are continuously obtained by a process. The possible reason is ( C ).

A. The process is a short process.

B. The process of the highest priority.

C. The ready queue was empty.

D. The process of the longest waiting time.

### **二、填空题**

1. In the OS, there are three types of scheduling including \_\_\_\_\_\_\_\_\_\_ scheduling, \_\_\_\_\_\_\_\_ scheduling, \_\_\_\_\_\_\_\_\_ scheduling. long-term short-term medium-term

2. In the three level scheduling, the function of swap belongs to\_\_\_\_\_\_\_\_\_ scheduling. medium-term

3. There are two kinds of scheduling mode for process scheduling, they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. non-preemptive scheduling preemptive scheduling

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ scheduling is in charge of put processes in new state into the ready queue. Long-term

5. \_\_\_\_\_\_\_\_\_ scheduling algorithm can select a process with the shortest execution time in the ready queue, then assign CPU to it. SJF(or SPF)

### Chapter 6: Process Synchronization\*\*\*

### **一、单选题**

1. There are N processes sharing a program segment. A maximum of M processes are allowed to enter the program segment (N>M) at the same time. The value range of the mutual exclusion semaphore may be ( C ).
2. All integers between - N and M
3. All integers between 0 to N-M
4. All integers between M - N to M
5. All integers between M - N and N – M
6. The process may change state from running state to waiting state due to ( C ).
7. scheduler's scheduling
8. the time slice of the running process is used up
9. the current running process calls the wait operation
10. the current running process calls the signal operation
11. Concurrent（并发） processes are( D ).
12. independent
13. must synchronize
14. must mutually exclusive
15. may need synchronization or mutual exclusion
16. In the wait() operation of the semaphore s, the condition for the process to enter the waiting queue is ( A ).
17. s.value < 0
18. s.value<=0
19. s.value>0
20. s.value>=0
21. When using wait() and signal() operation to manage critical section, the initial value of semaphore is defined as 1. Now there is a process in the critical section, but there are n processes waiting to enter the critical section, then the value of semaphore is ( C ).
22. -1
23. 1
24. -n
25. n
26. There are n concurrent processes with critical section. If a process changes to wait state after calling wait() operation, then the value of semaphore must be ( A ) before calling wait() operation.
27. <=0
28. 1
29. n-1
30. n
31. If 4 processes share the same program segment, 3 processes are allowed to enter the critical section at the same time, the range of semaphore is ( C ).
32. 3,2,1,0
33. 4,3,2,1,0
34. 3,2,1,0,-1
35. 2,1,0,-1,-2

### **二、填空题**

1. In a multiprogramming system, the relations between different processes can be divided into two categories: the \_\_\_\_\_\_\_\_\_\_ refers to the existence of a logical relationship between processes that need to coordinate in order; \_\_\_\_\_\_\_\_\_\_ refers to the process in the constraints of critical resources sharing. A common method to solve these two problems is \_\_\_\_\_\_\_\_\_\_. Cooperation mutual exclusion semaphore
2. Using semaphore variable named s to achieve mutual exclusion between processes, critical areas should be put between \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_. wait(s) signal(s)
3. With wait, signal operation management related to the critical section, any process should call \_\_\_\_\_\_\_\_\_\_ operation before the critical section and should call \_\_\_\_\_\_\_\_\_\_ operation after the critical section. wait() signal()

### Chapter 7: Deadlock

### **一．单选题**

1. There are 4 necessary conditions for deadlock. To prevent the deadlock, we can break one of the 4 necessary conditions, but the condition of ( A ) should be guaranteed.

A. **Mutual exclusion** B. non preemption

C. partial distribution D. circular waiting

2. The banker algorithm is used to solve the problem of ( B ).

A. preventing deadlock B. avoiding deadlock

C. detecting deadlock D. releasing deadlock

3. There are 3 concurrent processes in a system, and 4 same kinds of resources are needed. The minimum number of resources is ( C ) for the system cannot cause deadlocked.

A.12 B.11

C.10 D. 9

### **二、填空题**

1. The methods used to solve the problem of deadlock include \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_ and deadlock detection and termination. deadlock prevention deadlock avoidance

2. Banker algorithm is to ensure that the system is in \_\_\_\_\_\_\_ state when the resources are allocated to applicants. safe

### Chapter 8: Main Memory

### **一、单选题**

1. After the source file is compiled to an object module. Each object module has a sequential address with 0 as the base address, this kind of address is called ( A ).
2. Logical address
3. Physical address
4. Memory address
5. Absolute address
6. During loading logical space of program to the physical space (main memory),OS need do the address translation, the translation is called ( D ).
7. compiling
8. linking
9. running

D．relocation

1. In partitioning memory management, each partition’s size should be ( D ).
2. equal
3. changeable at any time
4. unequal
5. maybe equal or unequal
6. In paging memory management, the mapping from page number to frame number should be through ( A ).
7. Page table
8. Segment table
9. PCB
10. JCB
11. In segment memory management, if we use 24bits to represent address, segment number occupy 8bits, then the max length of each segment should be ( B ) bytes.
12. 224
13. 216
14. 28
15. 232

6、In fixed partition memory management, the correct one is ( B ).

1. Equal partition size
2. Unequal partition size
3. Memory needs to be pre divided
4. generation of external fragments

A、I and II

B、I and II and III

C、II and III and IV

D、all the above statements are correct

### **二、填空题**

1. In dynamic partitioning technology, allocation algorithms include \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. first-fit best-fit worst-fit
2. In fixed partitioning technology, main memory cannot be used fully, the space waste produced in the partition is called \_\_\_\_\_\_\_\_. fragmentation
3. In paging technology, logical address includes \_\_\_\_\_\_\_\_\_and page offset. page number

### Chapter 9: Virtual Memory

### **一、单选题**

1. In the following memory management technologies, which one belongs to virtual memory technology ( C ).
2. Dynamic partitioning
3. Relocation partitioning
4. Demand paging
5. Basic paging
6. In demand paging memory management, if the size of page becomes double, the page fault times should be ( B ).
7. increase
8. reduce
9. unchanged
10. increase or reduce
11. Virtual memory technology can ( C ).
12. Increase the capacity of physical memory
13. Increase the capacity of physical disk
14. Increase the capacity of logical memory
15. Increase the capacity of logical disk
16. In the following elements, which one cannot influence the page fault rate ( A ).
17. service speed of Page fault interrupt
18. count of frames allocated to program
19. page size
20. Page Replacement algorithms

### **二、填空题**

1. In demand paging technology, \_\_\_\_\_\_\_\_\_ may happen when the page to be accessed is not in memory. page fault
2. In demand paging, If a process does not have “enough” pages, the page-fault rate is very high，some page maybe swapped frequently, this phenomenon is called \_\_\_\_\_\_\_\_. thrashing
3. In a demand paging system, a program’s pages visit flow is as following: 2，3，2，1，5，2，4，5，3，2，5，2. The size of working set is 3 frames and the initial state of working set is empty. According to OPT,FIFO and LRU page replacement algorithms, the times of page faults should be \_\_\_\_\_\_\_\_、\_\_\_\_\_\_\_\_and\_\_\_\_\_\_\_\_\_。 6、9、7

### Chapter 12: Mass-Storage Management

### **选择题**

1. Disk access time does not include (D ).

A. Rotational latency

B. transmission time

C. seek time

D. Operation time

2. The purpose of the disk scheduling is to shorten (B).

1. Start time
2. Seek time
3. Transmission time
4. Rotational latency

3. The Rotational latency of the disk is related to ( **B**).

1. Diameter of disk

B. Rotation speed of the disk

C. Capacity of disk

D. Track location

4. In the disk scheduling algorithms, ( B ) algorithm may change the moving direction of the **disk arm(磁盘臂)** at any time（随时）.

A. Elevator method

B. Shortest seek time fist：SSTF

C. Scan algorithm

D. c-scan algorithm

### Chapter 13 I/O System

### **简答题**

1. List I/O control methods. Can Busy-wait exist in which control methods?

（1）Pooling

（2）Interrupt

（2）DMA

Busy-wait can exist in pooling method

1. Illustrate Six Step Process to Perform DMA Transfer?

