Quiz - 2: Operating Systems with Linux (MCA-105)

MCA – 1st Semester (Batch: 2023-25)

Time: 15 Minutes

Max. Marks: 20

Roll Number … … … … … … … … … … … … … … Name: … .

1. Which of the following limitations may be there in implementing the Semaphore mechanism for processes synchronization? (1)
   a) Busy waiting
   b) Deadlock
   c) Starvation
   d) All of the above

2. Consider A and B are the processes before and after a context switch, and PA and PB are their PCBs respectively. In dispatch latency, which of the following time units will be included? (1)
   a) A executing
   b) B executing
   c) Save state into PA, and restore state from PB
   d) All of these

3. For an interactive system, which of the following criteria is more important? (1)
   a) CPU utilization
   b) Response time
   c) Turnaround time
   d) Throughput

4. Which of the following scheduling algorithms allows a process to move between queues? (1)
   a) Feedback
   b) Multilevel feedback queue
   c) Round robin
   d) Multilevel queue

5. Consider the following set of processes (the length of the CPU burst given in milliseconds): [P1: 6], [P2: 8], [P3: 7] and [P4: 3]. What will be the average waiting time using First-Come, First-Served (FCFS) and Shortest-Job-First (SJF) algorithms? (1)
   a) 10.25 ms and 7.00 ms
   b) 10.05 ms and 7.50 ms
   c) 10.50 ms and 7.50 ms
   d) 10.25 ms and 7.25 ms

6. Using priority scheduling algorithm, what will be the average waiting time for the following set of processes given with their priorities in the order - (Process : Burst Time : Priority) - (P1 : 10 : 3), (P2 : 1 : 1), (P3 : 2 : 4), (P4 : 1 : 5), (P5 : 5 : 2). (1)
   a) 8.02 ms b) 7.75 ms c) 8.20 ms d) 8.00 ms

7. Which of the following statements is incorrect? (1)
   a) Semaphore is a mechanism that can be used to provide synchronization of tasks.
   b) Counting semaphores can be used to control access to a given resource consisting of a finite number of instances.
   c) If a semaphore value is negative, its magnitude is the number of processes waiting on that semaphore.
   d) Binary semaphore is a special form of semaphore which cannot be used for implementing mutual exclusion.

8. Which of the classical problems of the synchronization can be solved using semaphore? (1)
   a) Bounded-buffer problem
   b) Readers-writers problem
   c) Dining-philosophers problem
   d) All of these

9. A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access takes place is called ... … … . (1)
   a) data consistency
   b) race condition
   c) starvation
   d) aging

10. In Linux, a processes is knows as … … ... it has been terminated, but its parent has not yet called wait(). (1)
    a) orphan b) zombie c) terminated d) init

11. In the bakery algorithm, to solve the critical section problem, ... (1)
    a) each process is put into a queue and picked up in an ordered manner
    b) each process receives a number (may or may not be unique) and the one with the lowest number is served next
    c) each process gets a unique number and the one with the highest number is served next
    d) each process gets a unique number and the one with the lowest number is served next

12. Which of the following items does not belong to the function of a dispatcher? (1)
    a) Switching context from one process to another
    b) Selecting a process among the available ones in the ready queue
    c) Switching to user mode
    d) Jumping to the proper location in the user program to resume that program

13. In context to communication between processes, … … … is also known as no buffering. (1)
    a) zero capacity
    b) bounded capacity
    c) unbounded capacity
    d) automatic buffering

14. Peterson's algorithm is used to synchronize … … ... processes. (1)
    a) n b) 8 c) 4 d) 2

15. A semaphore which is used to implement mutual-exclusion, is called ... (1)
    a) counting semaphore
    b) binary semaphore
    c) mutual semaphore
    d) exclusive semaphore

16. The … … … refers to the number of processes in memory (1)
    a) dispatcher
    b) long-term scheduler
    c) short-term scheduler
    d) degree of multiprogramming

17. The ……... process is assigned as the parent to orphan processes. (1)
    a) zombie b) main c) init d) renderer

18. A CPU-scheduling algorithm determines an order for the execution of its scheduled processes. Given n processes to be scheduled on one processor, how many different schedules are possible? Give a formula in terms of n. (1)
    a) n^2 b) n! c) n+1 d) n^n

19. When a process waits without consuming the processor, it is called … … …. (1)
    a) Spinlock b) Busy waiting c) Blocked waiting d) None of these

20. Solution of critical-section problem can be done with special … … ... hardware instructions. (1)
    a) automatic b) atomic c) blocked d) sleeping