REV-01
MCA/01/05

2024/06

**SET A**

# MASTER OF COMPUTER APPLICATION
## SECOND SEMESTER (REPEAT)
## OPERATING SYSTEMS
## MCA-203

[USE OMR SHEET FOR OBJECTIVE PART]

**Duration: 3 hrs.** **Full Marks: 70**

**Objective**

**Time: 30 mins.** **Marks: 20**

***Choose the correct answer from the following:*** ***1×20=20***

1. Which algorithm is defined in Time quantum?
   a. Shortest job scheduling algorithm
   b. Priority scheduling algorithm
   c. Multilevel queue scheduling algorithm
   d. Round robin scheduling algorithm

2. Which of the following scheduling algorithms gives minimum average waiting time?
   a. FCFS
   b. SJF
   c. Round-robin
   d. Priority

3. Which one of the following is the deadlock avoidance algorithm?
   a. Banker's algorithm
   b. Round-robin algorithm
   c. Elevator algorithm
   d. Karn's algorithm

4. For a deadlock to arise, which of the following conditions must hold simultaneously?
   a. Mutual exclusion
   b. No preemption
   c. Hold and wait
   d. All of the mentioned

5. The address generated by the CPU is referred to as.....
   a. Physical address
   b. Logical address
   c. Neither physical nor logical
   d. None of the mentioned

6. The size of a process is limited to the size of.....
   a. External storage
   b. Secondary storage
   c. Physical memory
   d. None of the mentioned

7. In Operating Systems, which of the following is/are CPU scheduling algorithms?
   a. Round Robin
   b. Shortest Job First
   c. Priority
   d. All of the mentioned

8. The first fit, best fit and worst fit are strategies to select a.....
   a. Process from a queue to put in memory
   b. Processor to run the next process
   c. Free hole from a set of available holes
   d. All of the mentioned

9. In internal fragmentation, memory is internal to a partition and.....
   a. Is being used
   b. Is not being used
   c. Is always used
   d. None of the mentioned

10. External fragmentation exists when?
    a. Enough total memory exists to satisfy a request but it is not contiguous
    b. The total memory is insufficient to satisfy a request
    c. A request cannot be satisfied even when the total memory is free
    d. None of the mentioned

11. In contiguous memory allocation:
    a. Each process is contained in a single contiguous section of memory
    b. All process are contained in a single contiguous section of memory
    c. The memory space is contiguous
    d. None of the above

12. What is the ready state of a process?
    a. When process is scheduled to run after some execution
    b. When process is unable to run until some task has been completed
    c. When process is using the CPU
    d. None of the mentioned

13. A set of processes is deadlock if.....
    a. Each process is blocked and will remain so forever
    b. Each process is terminated
    c. All processes are trying to kill each other
    d. None of the mentioned

14. The number of processes completed per unit time is known as:
    a. Output
    b. Throughput
    c. Efficiency
    d. Capacity

15. Which of the following is not the state of a process?
    a. New
    b. Old
    c. Waiting
    d. Running

16. Which of the following do not belong to queues for processes?
    a. Job Queue
    b. PCB queue
    c. Device Queue
    d. Ready Queue

17. What is a long-term scheduler?
    a. It selects processes which have to be brought into the ready queue
    b. It selects processes which have to be executed next and allocates CPU
    c. It selects processes which heave to remove from memory by swapping
    d. None of the mentioned

18. Suppose that a process is in "Blocked" state waiting for some I/O service. When the service is completed, it goes to the.....
    a. Running state
    b. Ready state
    c. Suspended state
    d. Terminated state

19. The interval from the time of submission of a process to the time of completion is termed as:
    a. Waiting time
    b. Turnaround time
    c. Response time
    d. Throughput

20. In priority scheduling algorithm.....
    a. CPU is allocated to the process with highest priority
    b. CPU is allocated to the process with lowest priority
    c. Equal priority processes cannot be scheduled
    d. None of the mentioned

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## Descriptive

Time : 2 hr. 30 mins. Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

1. Explain five different types of operating system. 10

2. a) What is segmentation? 2+8=10
   b) What are program threats and system threats?

3. a) What are the necessary conditions for deadlock? 4+6=10
   b) What is the use of resource allocation graph in deadlock? Explain with examples.

4. a) Explain all the possible states of a process with diagram. 6+4=10
   b) What is PCB?

5. a) What is File? What are the different file types? 5+5=10
   b) Explain different types of file access mechanisms.

6. a) Explain the Paging concept with the help of a diagram. 4+6=10
   b) Define First-Fit, Best-Fit and Worst-Fit allocation in memory.

7. Consider the following reference string with page frame 3. Find the total number of page faults using LRU and Optimal Page Replacement algorithms. 5+5=10

   7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1 3 2 0 1 7 0 1

8. a) Write a note on multi-level queue scheduling and multi-level feedback queue scheduling. 4+6=10
   b) Calculate the average waiting time and turnaround time using Round-Robin techniques having time quantum 3 for the following table:

| Process | Burst Time (ms) |
|---|---|
| P1 | 10 |
| P2 | 12 |
| P3 | 5 |
| P4 | 2 |
| P5 | 10 |

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