

**MASTER OF COMPUTER APPLICATION  
SECOND SEMESTER  
OPERATING SYSTEM  
MCA – 203**

( Use Separate Answer Scripts for Objective & Descriptive )

Duration : 3 hrs.

Full Marks : 70

( **PART-A: Objective** )

Time : 20 min.

Marks : 20

*Choose the correct answer from the following:*

*1X20=20*

1. When memory is divided into several fixed sized partition may contain \_\_\_\_
  - a. exactly one process
  - b. at least one process
  - c. multiple process at once
  - d. None of these
2. when the memory allocated to process is slightly larger than the process then
  - a. internal fragmentation occur
  - b. external fragmentation occur
  - c. both a and b
  - d. neither a nor b
3. 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
4. Which of the following is not the state of a process?
  - a. New
  - b. Old
  - c. Waiting
  - d. Running
5. 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
6. 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 can not be scheduled
  - d. None of the mentioned
7. 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
8. 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

9. The first fit, best fit and worst fit are strategies to select a \_\_\_\_\_
- process from a queue to put in memory
  - processor to run the next process
  - free hole from a set of available holes
  - all of the mentioned
10. Which one of the following is the deadlock avoidance algorithm?
- banker's algorithm
  - round-robin algorithm
  - elevator algorithm
  - karn's algorithm
11. Which of the following scheduling algorithms gives minimum average waiting time?
- FCFS
  - SJF
  - Round - robin
  - Priority
12. For a deadlock to arise, which of the following conditions must hold simultaneously?
- Mutual exclusion
  - No preemption
  - Hold and wait
  - All of the mentioned
13. Physical memory is broken into fixed-sized blocks called \_\_\_\_\_
- frames
  - pages
  - backing store
  - none of the mentioned
14. The segment limit contains the \_\_\_\_\_
- starting logical address of the process
  - starting physical address of the segment in memory
  - segment length
  - none of the mentioned
15. Among the following CPU scheduling algorithms, which of these allocated the CPU first to the process that requests the CPU first?
- Round Robin
  - SJF
  - Priority
  - FCFS
16. Which one of the following is a visual ( mathematical ) way to determine the deadlock occurrence?
- resource allocation graph
  - starvation graph
  - inversion graph
  - none of the mentioned
17. The data structures available in the Banker's algorithm are \_\_\_\_\_
- Available
  - Need
  - Allocation
  - All of the mentioned
18. The content of the matrix Need is \_\_\_\_\_
- Allocation - Available
  - Max - Available
  - Max - Allocation
  - Allocation - Max
19. A system is in the safe state if
- The system can allocate resources to each process in some order and still avoid a deadlock
  - There exists a safe sequence
  - both (a) and (b)
  - None of the mentioned

20. A process control block(PCB) does not contain which of the following
- a. code
  - b. stack
  - c. I/O status information
  - d. bootstrap program

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**(PART-B : Descriptive)**

Time : 2 hrs. 40 min.

Marks : 50

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

- 1. Explain five different types of operating system. 10
- 2. 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.
- 3. a. Explain all the possible states of a process with diagram. 6+4=10  
b. What is PCB?
- 4. a. What is segmentation? 2+8=10  
b. Explain the Paging concept with the help of a diagram.
- 5. a. What is File? What are the different file types? 5+5=10  
b. Explain different types of file access mechanisms.
- 6. 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	20
P2	12
P3	5
P4	2
P5	10

- 7. Write short notes on 5+5=10
  - a. Network operating system
  - b. Program Threats and System Threats
- 8. 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

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