

**MASTER OF COMPUTER APPLICATION
FIRST SEMESTER
OPERATING SYSTEMS
MCA-105**

**SET
A**

[USE OMR FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

Marks: 20

1X20=20

(Objective)

Choose the correct answer from the following:

1. What is the main function of the command interpreter?
 - a. To provide the interface between the API and Application program
 - b. To handles the file in the OS
 - c. To get and execute the next user specified command
 - d. None of these
2. The amount of work completed in a unit of time is called
 - a. Throughput
 - b. Waiting time
 - c. Response time
 - d. Turnaround time
3. Where is the operating system placed in the memory?
 - a. Either low or high memory(depending of the location of interrupt vector)
 - b. In the low memory
 - c. In the high memory
 - d. None of these
4. Which of the following is not a condition for deadlock?
 - a. Mutual exclusion
 - b. Hold and wait
 - c. Preemption
 - d. Circular wait
5. What is not an operating system?
 - a. Windows
 - b. Android
 - c. Linux
 - d. Command prompt
6. Which of the following is not a valid page replacement algorithm?
 - a. LRU
 - b. NRU
 - c. FIFO
 - d. LIFO
7. Which of the following ensures that if one process is using a shared variable, the other process will be excluded from doing the same?
 - a. Deadlock
 - b. Race condition
 - c. Mutual exclusion
 - d. Scheduling
8. Banker's algorithm can
 - a. Avoid deadlocks
 - b. Detect deadlocks
 - c. Prevent deadlocks
 - d. Recover from deadlocks
9. Which of the following is not a file attribute?
 - a. Protection
 - b. File type
 - c. Owner
 - d. Creation time

10. A memory buffer used to accommodate a speed differential is called _____.
 - a. Stack pointer
 - b. Cache
 - c. Accumulator
 - d. Disk buffer
11. Run time mapping from virtual to physical address is done by _____.
 - a. MMU
 - b. CPU
 - c. PCI
 - d. ALU
12. Memory Management technique in which system stores and retrieves data from secondary storage for use in main memory is called?
 - a. Fragmentation
 - b. Mapping
 - c. Paging
 - d. Buffer
13. Program always deals with
 - a. Logical address
 - b. absolute address
 - c. Physical address
 - d. relative address
14. A minimum of _____ variables is /are share required to be shared between processes to solve the critical section problem
 - a. One
 - b. Two
 - c. Three
 - d. Four
15. What is the full name of FAT?
 - a. File attribute table
 - b. File allocation table
 - c. Font attribute table
 - d. Format allocation table
16. BIOS is used?
 - a. By operating System
 - b. By compiler
 - c. By Interpreter
 - d. By application Software
17. What is the full name of the DSM?
 - a. Direct system module
 - b. Direct system memory
 - c. Demoralized system memory
 - d. Distributed shared memory
18. If the page size increases, the internal fragmentation is also?
 - a. Decreases
 - b. Increases
 - c. Remains constant
 - d. None of these
19. Which of the following is not application software?
 - a. Windows 7
 - b. WordPad
 - c. Photoshop
 - d. MS-excel
20. Who provides the interface to access the services of the operating system?
 - a. API
 - b. System Call
 - c. Library
 - d. Assembly Instruction

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(Descriptive)

Time : 2 hrs. 30 min.

Marks : 50

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

1. What is synchronization? Explain Sleeping Barber problem. Write the algorithm of Sleeping Barber Problem. 2+4+4=10
2. a. Explain Process Control Block (PCB) with diagram. 5
b. What is directory? Explain different directory structure. 1+4=5
3. Consider the following set of processes. The length of the CPU burst time in milliseconds, and the priority of each of the processes are as follows. 5+5=10

Process	Burst time	Priority
P1	8	3
P2	1	2
P3	3	3
P4	2	5
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0. Find out the average turnaround time, average waiting time, and average response time in FCFS and RR (time quantum = 2).

4. What is paging? What is meant by virtual memory? Explain the role of paging in virtual memory. 2+2+6=10
5. Write short note on 5+5=10
 - i) Real time operating system
 - ii) Multiprogramming operating system
6. a. What is page replacement algorithm? Explain Optimal Page Replacement algorithm 1+4=5
b. What is a race condition? Write the solution of critical section problem. 1+4=5

7. Explain reader writer problem. Write the algorithm of reader-writer problem. 5+5=10
8. a. What is meant by deadlock? Write the avoidance condition of deadlock. 1+4=5
- b. Explain demand paging with suitable diagram. 5

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