MASTER OF COMPUTER APPLICATION
THIRD SEMESTER
OPERATING SYSTEM
MCA-301

Duration: 3 Hrs. **Marks: 70**

PART : A (OBJECTIVE) = 20
PART : B (DESCRIPTIVE) = 50

[PART-B : Descriptive]

Duration: 2 Hrs. 40 Mins. **Marks: 50**

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

1. What is a deadlock? Explain the prevention for the necessary conditions of deadlock. (2+8=10)

2. What are the criteria included in scheduling? Explain any 5 scheduling algorithms along with examples for each of them. (5+5=10)

3. In an operating system, what do you mean by a process? Explain the states of a process diagrammatically. Describe how PCB is used in a process. (2+5+3=10)

4. What is an operating system? Explain its types of available views. (2+8=10)

5. "Several instances of a resource type" is under which category of deadlock? How it is implemented, explain it with proper algorithm and a suitable example. (2+8=10)

6. What do you mean by paging? Explain the types of Page Replacement Algorithm for the reference string: (1+9=10)
   7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

7. What is logical vs Physical address space? Explain the dynamic relocation using a relocation register along with a diagram. (5+5=10)

8. Explain the different types of file operations. Describe the Access Methods of a file system. (6+4=10)

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[PART-A : Objective]

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

1. The _____ is a set of methods for ensuring that at least one of the necessary conditions cannot hold.
   a. Deadlock avoidance b. Deadlock prevention
   c. Deadlock detection d. All of the above

2. Which one is not a necessary condition of deadlock?
   a. Safe state b. No preemption
   c. Circular wait d. Mutual exclusion

3. The ready queue is generally stored as a _____.
   a. Stack b. Binary tree
   c. Linked list d. Circular queue

4. The _____ scheduler controls the degree of multiprogramming.
   a. Short term b. Long term
   c. Medium term d. All of the above

5. The task of switching the CPU to another process that requires saving the state of the old process and loading the saved state for the new process is known as _____.
   a. I/O bound process b. Scheduler
   c. Context switch d. Threads

6. The _____ state of process is waiting to be assigned to a processor.
   a. Waiting b. Ready
   c. Running d. New

7. Software may trigger an interrupt by executing a special operation called a_____.
   a. Error b. Trap
   c. System call d. User call

8. A _____ is a unit of work in a system.
   a. Process
   b. PCB
   c. Memory management
   d. File management

9. Aborting one or more processes to break the circular wait is the property of:
   a. Resource preemption
   b. Starvation
   c. Rollback
   d. Process termination

10. The address loaded into memory address register of a memory is referred to as_____.
    a. Logical address
    b. Physical address
    c. Memory management unit
    d. Virtual memory

11. The _____ is a memory management scheme that permits the physical address space of a process to be non-contiguous.
    a. Segmentation
    b. Fragmentation
    c. Paging
    d. Virtual memory

12. "We will replace the page that has not been used for the longest period of time"- is the approach of:
    a. LRU Algorithm
    b. OPT Algorithm
    c. FIFO page replacement Algorithm
    d. All of the above

13. The CPU hardware has a wire called the _____, that the CPU senses after executing every instruction.
    a. Polling
    b. Interrupt request line
    c. Interrupt handler
    d. Data recovery

14. The _____ is a memory area that stores data while they are transferred between two devices or between a device and an application.
    a. I/O scheduling b. Caching
    c. Buffer d. Spooling

15. The simplest form of disk scheduling is the_____ scheduling algorithm.
    a. FCFS
    b. SSTF
    c. SCAN
    d. C-SCAN

16. The _____ page replacement algorithm has the lowest page faults rate.
    a. FIFO
    b. Optimal
    c. LRU
    d. All of the above

17. The _____ is the separation of the user logical memory from physical memory.
    a. Virtual memory
    b. Virtual address space
    c. Paging
    d. Fragmentation

18. "Allocate the smallest hole that is big enough"- is the principle of:
    a. First fit
    b. Worst fit
    c. Best fit
    d. All of the above

19. The limit register along with relocation register is used for_____.
    a. Memory allocation
    b. Fragmentation
    c. Paging
    d. Memory protection

20. The _____ system is similar to a paging system with swapping.
    a. Demand segmentation
    b. Demand paging
    c. Demand fragmentation
    d. Page replacement algorithm

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UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA

[PART (A) : OBJECTIVE]

Duration : 20 Minutes

Serial no. of the main Answer sheet

Course : .....

Semester : ..... **Roll No :** .....

Enrollment No : ..... **Course code :** .....

Course Title : .....

Session : 2017-18 **Date :** .....

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Instructions / Guidelines

- The paper contains twenty (20) / ten (10) questions.
- Students shall tick (✓) the correct answer.
- No marks shall be given for overwrite / erasing.
- Students have to submit the Objective Part (Part-A) to the invigilator just after completion of the allotted time from the starting of examination.

Full Marks	Marks Obtained
20	

Scrutinizer's Signature *Examiner's Signature* *Invigilator's Signature*