BACHELOR OF COMPUTER APPLICATION
Fourth Semester
OPERATING SYSTEM
(BCA - 17)

Duration: 3Hrs.

Full Marks: 70

PART A (Objective) =20
PART-B (Descriptive)=50

PART-B (Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

1. Answer the following questions (any *five*):

$2\times5=10$

a) What are the basic functions of an operating system?

b) Differentiate preemptive scheduling and non-preemptive scheduling.

c) Define race condition.

d) What is the difference between hard and soft real time systems?

e) Why paging is used?

f) What is critical section, explain?

g) What is virtual memory?

2. Answer the following questions (any *five*):

$3\times5=15$

a) What is multi tasking, multi programming, multi threading?

b) What is fragmentation? Write difference types of fragmentation.

c) Explain the Access Control in file system.

d) Explain Stable-Storage Implementation.

e) What is deadlock? What are the conditions that causes deadlock?

f) Explain different states of a process with state diagram.

g) What is throughput, turnaround time, waiting time and response time?

3. Answer the following questions (any *five*):   5×5=25

a) Explain the different page replacement policies.

b) Explain the following disk scheduling algorithms:

   (i) Scan scheduling

   (ii) FCFS scheduling

c) What is memory management? Explain Logical and Physical Address Space.

d) What is process control block? Explain.

e) Explain the Paging technique.

f) Explain Dining Philosophers Problem.

g) Consider the following set of processes, with the length of the CPU burst time and arrival time given in millisecond:

Processes	Burst Time	Arrival Time
P1	10	0
P2	6	2
P3	4	3
P4	12	4

a) Find average waiting time using SJF scheduling.

b) Find average waiting time using RR scheduling (Time quantum= 3 ms).

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Duration: 20 minutes   **Marks – 20**

PART-A (Objective)

Time: 20 mins   **Total Marks: 20**

I. Choose the correct option: 1×20=20

1. Which of the following file format supports in Windows 7?
   a) NTFS   b) BSD
   c) EXT   d) All of the above

2. ._____ is a unique tag, usually a number, identifies the file within the file system.
   a) File identifier   b) BSD
   c) File type   d) None of the mentioned

3. File type can be represented by
   a) File name   b) File extension
   c) File identifier   d) None of the mentioned

4. Virtual Memory is
   a) Extremely Large Main memory
   b) Extremely Large Secondary memory
   c) An illusion of extremely large main memory
   d) An illusion of extremely large secondary memory

5. Operating System manages
   a) Memory   b) Processor
   c) I/O devices   d) All of the above

6. Unix Operating System is an
   a) Multi User Operating System   b)Time Sharing Operating System
   c) Multi Tasking Operating System   d) All the Above

7. In which type of the following OS, the response time is very crucial.
   a) Network Operating System   b) Real Time Operating System
   c) Batch Operating System   d) Unix Operating System

8. To avoid the race condition, the number of processes that may be simultaneously inside their critical section is
   a) 8   b) 1   c) 16   d) 0

9. Process is
   a) Program in High level language kept on disk   b) Contents of main memory
   c) A program in execution   d) A job in secondary memory

10. The strategy of allowing processes that are logically runnable to be temporarily suspended is called
    a) Preemptive scheduling   b) Non preemptive scheduling
    c) Shortest job first   d) First come first served

11. The LRU algorithm
    a) Pages out; pages that have been used recently
    b) Pages out; pages that have not been used recently
    c) Pages out; pages that have been least used recently
    d) Pages out; the first page in a given area

12. When there is enough memory to fit a process in memory, but the space is not contiguous we need
    a) Internal Fragmentation   b) Virtual Fragmentation
    c) External fragmentation   d) None of the above

13. Which of the following statements is false?
    a) The technique of storage compaction involves moving all occupied areas of storage to one end or other of main storage.
    b) Compaction does not involve relocation of programs.
    c) Compaction is also known as garbage collection.
    d) The system must stop everything while it performs the compaction.

14. Inter process communication
    a) is required for all processes   b) is usually done via disk drives
    c) is never necessary   d) allows processes to synchronize activity

15. Piece of code that only one thread can execute at a time is called
    a) Mutual Exclusion   b) Synchronization
    c) Critical Section   d) All of the Above

16. The FIFO algorithm
    a) executes first the job that last entered the queue.
    b) executes first the job that first entered the queue.
    c) execute first the job that has been in the queue the longest.
    d) executes first the job with the least processor needs.

17. Which of the following condition is required for deadlock to be possible?
    a) Mutual exclusion.
    b) A process may hold allocated resources while awaiting assignment of other resources.
    c) No resource can be forcibly removed from a process holding it.
    d) All of the above.

18. In virtual memory systems, Dynamic address translation
    a) is the hardware necessary to implement paging.
    b) stores pages at a specific location on disk.
    c) is useless when swapping is used.
    d) is part of the operating system paging algorithm.

19. Fragmentation of the file system
    a) occurs only if the file system is used improperly.
    b) can always be prevented.
    c) can be temporarily removed by compaction.
    d) is a characteristic of all file systems.

20. The memory allocation scheme subject to "external" fragmentation is
    a) Segmentation   b) Swapping
    c) Pure demand paging   d) Multiple contiguous fixed partitions

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University of Science and Technology, Meghalaya

Date Stamp:_____

Instructions to Candidates

For Objective Type Questions

Page No.	Marks
Total	

For Descriptive Type Questions

Question No.	Marks
Total	
Grand Total	

_____   _____   _____
Scrutinizer's Signature   Examiner's Signature   Invigilator's Signature