

Roll No.

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F- 574**M.Sc. (IT) (Second Semester)
EXAMINATION, May - June, 2022****Paper Fourth****Operating System (With Linux As Case Study)****(204)***Time : Three Hours]**[Maximum. Marks:100**[Minimum Pass Marks:40***Note: Attempt all sections as directed.****Section - A****(Objective/Multiple Type Questions)****(1 mark each)****Note : Choose the correct/most appropriate answer and write it in your answer book.**

1. When was the first operating system developed?
 - (A) 1948
 - (B) 1949
 - (C) 1950
 - (D) 1951

2. Which of the following is a single - user operating system?
 - (A) Windows
 - (B) MAC
 - (C) MS - DOS
 - (D) None of these
3. Which of the following operating system does not support more than one program at a time:
 - (A) Linux
 - (B) Windows
 - (C) MAC
 - (D) DOS
4. Who provides the interface to access the services of the operating system?
 - (A) API
 - (B) System call
 - (C) Library
 - (D) Assembly instruction
5. Where are placed the list of processes that are prepared to be executed and waiting?
 - (A) Job queue
 - (B) Ready queue
 - (C) Execution queue
 - (D) Process queue

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6. Who among the following can block the running process?
- (A) Fork
 - (B) Read
 - (C) Down
 - (D) All of these
7. Which of the following is an example of a real time operating system?
- (A) MAC
 - (B) MS - DOS
 - (C) Windows 10
 - (D) Process control
8. Which type of scheduling is round-robin scheduling?
- (A) Linear data scheduling
 - (B) Non-linear data scheduling
 - (C) Preemptive scheduling
 - (D) Non preemptive scheduling
9. Which condition must be satisfied to solve a critical section problem?
- (A) Bounded waiting
 - (B) Progress
 - (C) Mutual exclusion
 - (D) All of these

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10. Which of the following "semaphore" can take the non - negative integer values?
- (A) Binary semaphore
 - (B) Counting semaphore
 - (C) Real semaphore
 - (D) All of these
11. Banker's algorithm is used?
- (A) To prevent deadlock
 - (B) To prevent page fault
 - (C) To solve the deadlock
 - (D) To recover deadlock
12. If the page size increases the internal fragmentation is__?
- (A) Decreases
 - (B) Increases
 - (C) Remain constant
 - (D) None of these
13. The size of virtual memory is based on which of the following?
- (A) CPU
 - (B) RAM
 - (C) Address bus
 - (D) Data bus

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14. Which of the following is a condition that causes dead-lock?
- (A) Mutual exclusion
 - (B) Circular wait
 - (C) Non preemption
 - (D) All of these
15. Which of the following page replacement algorithms suffers from Belady's anomaly?
- (A) FIFO
 - (B) LRU
 - (C) Optimal page replacement
 - (D) Both LRU and FIFO
16. Thrashing occurs when
- (A) When a page fault occurs
 - (B) Processes on system frequently access pages not memory
 - (C) Processes on system are in running state
 - (D) Processes on system are in waiting state
17. Which method is the best among file allocation methods?
- (A) Linked
 - (B) Contiguous
 - (C) Indexed
 - (D) None of these

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18. In which allocation method does the user size the file before creating the file?
- (A) Contiguous
 - (B) Indexed
 - (C) Linked
 - (D) None of these
19. Which of the following isn't a part of the file directory?
- (A) Attributes
 - (B) Protocol
 - (C) Location
 - (D) Ownership
20. In distributed system, each process has its own
- (A) local memory
 - (B) Clock
 - (C) Both (A) and (B)
 - (D) None of the above

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Section - B

(Very Short Answer Type Questions)

(2 marks each)

Note : Attempt all questions. Give answer in 2 or 3 sentences.

1. What is the difference between micro kernel and macro kernel?
2. What is virtual memory?
3. What is thrashing?
4. What are the four necessary and sufficient conditions behind the deadlock?
5. What is the difference between logical address space and physical address space?
6. What is starvation in operating system?
7. What is time - sharing system?
8. What are device drivers?
9. What is overlays?
10. What is spooling?

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Section - C

(Short Answer Type Questions)

(3 marks each)

Note : Attempt all the questions. Answer precisely using less than or equal to 75 words.

1. Describe system calls and its type.
2. What are the advantages of multiprocessor system?
3. What is process? Explain the basic functions of process management.
4. What are the various IPC mechanism?
5. What is context switching?
6. What s the basic difference between pre-emptive and non-premptive scheduling?
7. Explain compaction.
8. What is Belady's anomaly?
9. Explain the concept of Demand Paging.
10. What are Environment Variables?

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Section - D

(Long Answer Type Questions)

(6 marks each)

Note : Attempt all questions. Answer precisely using less than or equal to 150 words.

1. What are the functions of operating system?

OR

Explain evolution of operating system. Explain different types of operating system.

2. What are the different types of scheduling algorithms? Explain any two.

OR

Write short note on *(Any two)*

1. Context Switching
2. Multiprogramming
3. Thread life cycle

3. How deadlock can be prevented?

OR

Explain the use of Banker's algorithm for deadlock avoidance with illustration.

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4. Write short note on *(any two)*

1. Paging
2. Least Recently used Algorithm (LRU)
3. FIFO

OR

What is page fault handling? How OS handles page fault?

5. Explain Domain protection mechanism in details.

OR

Explain the attributes and file operation in brief.