

**MASTER OF COMPUTER APPLICATION
OPERATING SYSTEMS [CCMCA-102]**

TIME: 3 Hrs.

MM: 70

GROUP-A

Attempt All of these.

$$2 * 10 = 20$$

- Which of the following is not a part of the operating system ?
 - I/O control program
 - Supervisor
 - Performance monitor
 - Job control program
- FIFO scheduling is...
 - Deadline scheduling
 - Non-pre-emptive scheduling
 - Pre-emptive scheduling
 - Fair share scheduling
- An increase in a Computer's RAM leads to a typical improvement in performance because
 - fewer page fault occur
 - Virtual memory increases
 - A larger RAM is faster
 - Segmentation faults occur
- Thrashing occurs in a system when..
 - A page faults pops up
 - The process on the system are in running state
 - The process on the system access pages and not memory frequently.
 - A page hit pop up
- Which one of these is not shared by the same process's threads?
 - Stack
 - Address space
 - Message queue
 - File Descriptor Table
- A system is in safe state if ----
 - There exist a safe sequence
 - The system can allocate resources to each process in some order and still avoid a deadlock
 - Both A and B
 - None of these
- Consider a system with LA = 27 bits and the PA (physical address) = 21 bits the page size = 4 kb, then calculate the no. of pages and no. of frames?
 - 30 k pages and 500 frames
 - 32 k pages and 512 frames
 - 51 and 480 frames
 - None of these
- The logical address is also divided into fixed size blocks called as
 - Frames
 - Pages
 - size of main memory
 - size of page table
- A deadlock avoidance algorithm dynamically examines the _____ to ensure that a circular wait condition can never exist
 - operating system
 - recourse
 - system storage
 - recourse allocation state
- The operating system keeps a small table containing information about all open file is called _____
 - file table
 - directory table
 - open-file table
 - system table

2
3
1803
1503
2777
777
111
511

GROUP-B

Answer Any Four

5*4 = 20

11. What are the major activities of an operating systems with regard to process management
12. Differentiate between Distributed operating systems and Multiprocessor operating systems?
13. Define Process and Thread and explain advantages of threads?
- 14 Explain paging and segmentation with their hardware architecture.
15. What is virtual memory? Mention its advantages
16. Consider a disk queue with request for I/O to the block on the cylinders: 47, 38, 121, 191, 87, 11, 92, 10. The SCAN and C-LOOK scheduling is used. The head initially is at 63 moving towards larger cylinder number on its servicing pass. The cylinders are ordered in number from 0 – 199. Find the total movement incurred while servicing these request.

GROUP-C

Answer Any Two

15*2 = 30

17. Explain different types of file access and file allocation methods with their suitable examples.
- 18 a) Write about the various CPU scheduling criteria's. b) Consider the following table of arrival time and burst time for 6 process: P1, P2, P3, P4, P5 and P6. We can schedule them based on their priority (higher number will be the higher priority. Mode pre-emptive and non-pre-emptive both scheduling criteria can be used. Calculate avg. WT and avg. TAT of the 6 process.

Process Number	AT	BT	Priority
P1	0	4	4
P2	2	5	5
P3	2	1	7
P4	3	2	2
P5	4	3	1
P6	5	6	6

*Contiguous
Contiguous
Blocks*

19. a) What is page replacement and what are types of page replacements algorithms.
- b) Consider the reference stream 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page fault and page hit will occur while using FCFS and LRU using 3 frames.
20. a) Explain Resource allocation graph (RAG) . Define deadlock avoidance.
- b) Let us consider the following snapshot for understanding the Banker's Algorithm:
 1. Check if the system is in a safe state or unsafe If it is safe state then what its order.
 2. Determine the total sum of each type of resource?

Process	Allocation			Maximum			Current Available		
	A	B	C	A	B	C	A	B	C
P0	1	1	2	4	3	3	2	1	0
P1	2	1	2	3	2	2			
P2	4	0	1	9	0	2			
P3	0	2	0	7	5	3			
P4	1	1	2	1	1	2			

*87
10
77*

*63
30
25*

*191
110
180*

*191
38
153*