



CONTINUOUS ASSESSMENT TEST- 3

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course Name: Operating System

Course Code: CS 8493

Branch: CSE / IT

Year / Sem : II / IV

Duration: 3 hours

Date: 24.06.2021

Max.Marks: 100

PART A (10 x 2 = 20)

Answer all the Questions.

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| 1. Define Multiprogramming | K1 (CO1) |
| 2. Compare and contrast DMA and cache memory | K4 (CO1) |
| 3. What do you mean by system calls? | K1 (CO1) |
| 4. Define the term 'Dispatch Latency'. | K1 (CO2) |
| 5. What requirement is to be satisfied for a solution of a critical section problem? | K1 (CO3) |
| 6. Sketch and describe the state of the process | K3 (CO3) |
| 7. What is demand paging and what is its use. | K1 (CO4) |
| 8. Differentiate external fragmentation with internal fragment | K4 (CO4) |
| 9. List the various File Attributes | K1 (CO5) |
| 10. What are the Components of a Linux System? | K1(CO6) |

PART-B(5x13 = 65)

Answer all the Questions.

- 11.(a) Explain the operating system structure and its component (CO1) K2
(or)
(b) Sketch the structure of direct memory Access in detail (CO1) K3
- 12.(a) Consider a disk with 200 tracks and the queue has random requests from different processes in the order:23, 89, 132, 42, 187, Initially arm is at 100. The cylinders are numbered from 0 to 199. Find the Average Seek length using the following Disk Scheduling Algorithm FIFO, SSTF, LOOK and C-LOOK algorithm. (CO2) K2
(or)
(b) Consider the set of processes with arrival time (in milliseconds), CPU burst time (in milliseconds) , and priority (0 is the highest priority) shown below. (CO2) K2

Process	Arrival Time	Burst Time	Priority
P1	0	11	2
P2	5	28	0

P3	12	2	3
P4	2	10	1
P5	9	16	4

Find the average waiting time and turn around time for all process using the below mentioned CPU scheduling method (CO2) K2

- (i) Priority scheduling (7)
- (ii) Non-preemptive SJF (3)
- (iii) FCFS (3)

13.(a) what is meant by Critical section Problem and propose a solution based on Synchronisation hardware and mutex lock. (CO3) K2

(or)

(b) Consider the following snapshot of a system .P0,P1,P2,P3,P4 are 5 processes present and A,B,C,D are the resources details given in the table

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following based on Banker's Algorithm

- (i) What is the content of NEED Matrix? (5)
- (ii) Is the system in a safe state? If yes mention the safe sequence (5)
- (iii) Which process may cause deadlock if the system is not safe. (3) (CO3) K2

14.(a) With a neat sketch. Explain how a logical address is translated into a physical address using the Paging mechanism. (CO4) K2

(or)

(b) Consider the following page reference string [1,2,3,4,5,3,4,1,6,7,8,7,8,9,7]. How many page faults and page hits would occur for the following replacement algorithms? Assume four frames and all frames are initially empty. (CO4) K3

(i) FIFO

(ii) LRU

(iii) OPTIMAL

15.(a) Discuss the different techniques with which a file can be shared among different users

(CO5) K2

(or)

(b) Describe I/O hardware and its applications

(CO5) K2

PART-C(1x15 = 15)

16. (a) Explain kernel modules in linux system

(CO6) K2

(or)

(b) Explain the architecture and SDK framework of android IOS?

(CO6) K2

COURSE OUTCOMES (CO)

At the end of the course the students will be able to

CS8493–Operating Systems

Course xCode	Course Outcomes
CO1	Understand the basic concepts and functions of operating systems.
CO2	Analyze various scheduling algorithms.
CO3	Understand threads, process synchronization and deadlock- prevention and avoidance algorithms.
CO4	Compare and understand various memory management schemes.
CO5	Understand the functionality of file and I/O systems.
CO6	Learn the basics of Linux system and Mobile OS like iOS and Android.