Question Paper Code	12805

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024
Fourth Semester

Computer Science and Engineering

(Common to Information Technology , Computer Science and Engineering & Computer Science and Engineering(Cyber Security))

20CSPC401 – OPERATING SYSTEMS

Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

	Marks	K-Level	CO
1. Relate Multiprocessor systems and give their advantages.	2	K2	CO1
2. Classify system call. What are the five major categories of system calls?	2	K2	CO1
3. Compare preemptive and non-preemptive scheduling.	2	K2	CO2
4. Construct an algorithm, which fulfills all the requirements of critical section.	2	K2	CO2
5. Illustrate the contrast of virtual memory and physical memory.	2	K2	CO3
6. If the average page faults service time of 25 ms and a memory access time of 100ns.Calculate the effective access time.	2	K2	CO3
7. State the need of disk scheduling	2	K1	CO4
8. Point out the various disk-scheduling algorithms.	2	K1	CO4
9. Examine how an index file is used to speed up the access in direct-access files.	2	K2	CO5
10. Find the most popular methods for specifying a directory's logical structure.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

		Marks	K-Level	CO
11.	a) i) Elaborate multiprocessor system in detail.	7	K2	CO1
	ii) Illustrate the Dual-Mode operation in operating system operations.	6	K2	CO1
	OR			
	b) Explain in detail about the various types of system calls with necessary illustrations.	13	K2	CO1
12.	a) i) Discuss in detail about the real-time scheduling with necessary illustrations.	7	K4	CO2
	ii) Interpret the concept of Inter Process communication (IPC).	6	K4	CO2
	OR			
	b) Consider the following processes with its arrival time, burst time and priority	13	K4	CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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Process	Arrival Time	Burst Time	Priority
P1	0	12	2
P2	1	16	5
P3	2	5	1
P4	3	8	4
P5	4	12	3

Give Gantt chart and calculate Average Turnaround Time and Average Waiting Time for:
a) First Come First Served (FCFS)
b) SJF (Shortest Job First)
c) Preemptive priority algorithm
d) Justify which algorithm schedules efficient.

13. a) i) Examine the concept of swapping with an example. 7 K4 CO3

   ii) Illustrate in detail about the segmentation with neat diagram. 6 K4 CO3

OR

   b) Consider the following page reference string: 13 K4 CO3
   1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.
   How many page faults would occur for the following replacement algorithms, assuming one, two, three, four, five, six, or seven frames? Remember all frames are initially empty, so your first unique pages will all cost one fault each.
   i) FIFO replacement
   ii) Optimal replacement
   iii)LRU replacement

14. a) State about disk scheduling and List out the various scheduling algorithms with an example. 13 K2 CO4

OR

   b) Provide the relevant diagrams to demonstrate the different kinds of directory structure types. 13 K2 CO4

15. a) Elaborate about Linux kernel and virtualization with a neat diagram. 13 K2 CO5

OR

   b) Interpret the detail memory management in LINUX system. 13 K2 CO5

PART - C (1× 15 = 15 Marks)

16. a) Give a brief overview of the importance of the processes needed in successfully installing the Xen and VMware software on a Linux host for virtualization. 15 K4 CO6

OR

   b) Suppose the order of request is- 82,170,43,140,24,16,190.Total 200Tracks and current position of Read/Write head is: 50 moving in left direction. Find the number of head movements in cylinders using FCFS scheduling, SCAN, SSTF,LOOK. 15 K4 CO6

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create ***12805***