[4858] - 204

T.E. (Information Technology) (Semester - I)
OPERATING SYSTEM
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 100*

SECTION - I

Q1) A) What is the purpose of system call and how do the system calls relate to operating system? **[8]**

B) How operating system is as resource manager ? State and explain the basic functions of operating system? **[8]**

OR

A) Discuss various architectures of operating system.

B) Write a shell script for sorting a given list of numbers using bubble sort.

Q2) A) Draw the Process Control Bock and explain it. **[8]**

B) What is a thread? Define User Level Thread (ULT) and Kernel Level Thread (KLT).

How is ULT mapped to KLT? **[8]**

OR

A) Consider the following processes **[12]**

Processes	BT	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes arrived in order P1 to P5 all at 0

i) Draw Gantt chart to show the execution using FCFS, SJF, non-preemptive priority (smaller priority implies higher priority).

ii) Calculate average TAT and WT.

B) Explain multilevel feedback queue scheduling. **[4]**

Q3) A) List the requirements of mutual exclusion. **[6]**

B) Write a semaphore solution for readers-writers problem. **[6]**

C) Apply the deadlock Detection algorithm for following example and show the results. **[6]**

Available [2 10 0]

Request   Allocation

2001   0010

1010   2001

2100   0120

OR

A) What is the difference among deadlock avoidance, detection and prevention? **[8]**

B) Write a semaphore solution for dining philosophers problem. **[6]**

C) Explain monitors in brief. **[4]**

SECTION - II

Q4) A) Draw graph of degree of multiprogramming verses CPU utilization. Explain the nature of graph. **[6]**

B) Explain with the help of a neat diagram how TLB can be used to improve Effective Access time? **[10]**

OR

A) What are the common techniques for structuring the page table? Explain at least three of the techniques. **[10]**

B) For the following reference string. **[6]**

5, 6, 7, 8, 5, 6, 9, 5, 6, 7, 8, 9

Count the number of page faults that occur with 3 frames and 4 frames using FIFO page replacement method. Discuss the result.

Q5) A) A disk drive has 500 cylinders, numbered 0 to 499. The drive is currently serving a request at cylinder 255 and the previous request was at cylinder 143. The queue of pending requests in FIFO order is: **[9]**

84, 147,91, 177,286,341,78,488.38, 130

Starting from current head position, what is the total distance that the disk arm moves to satisfy all pending requests for each of the following disk scheduling algorithms?

i)   FCFS

ii) LOOK

iii) C-LOOK

B)   Explain various allocation methods for storage of files on disk.   **[9]**

<div align="center">OR</div>

A)   Write Short note on   **[9]**

i)   Directory Structure

ii) File Sharing.

B)   Describe free space management techniques with suitable example.   **[9]**

Q6) A)   Discuss the security in UNIX.   **[8]**

B)   What is the difference between a threat and an attack? Explain with example. **[8]**

<div align="center">OR</div>

A)   Explain techniques and security policies to improve the resistance to threats.   **[8]**

B)   Explain how the access matrix can be implemented effectively?   **[8]**

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