Paper code: MCA-106 Subject: Operating systems

Note: Question 1 is compulsory. Attempt four questions from rest.

Q1. Explain in brief: (2X10=20)

(a) Define "Thrashing".
(b) List the differences between Internal Fragmentation and external Fragmentation.
(c) What do you know about "Spooling".
(d) Why does the page size is of $2^n$.
(e) List the necessary and sufficient conditions of deadlock.
(f) Explain the disadvantages of second attempt of Dekker's algorithm for process synchronization.
(g) List the differences between preemption and non-preemption.
(h) What is "buffering".
(i) List the disadvantages of Index allocation strategy.
(j) Define Multiprogramming.

Q2. Discuss about safe state and usefulness of safety algorithm for Deadlock avoidance (10)

Q3. Describe the state transition model in which few states resides in secondary memory. Also describe the use of these states. (10)

Q4. Consider the following process: (10)

| Process | Arrival Time | Burst Time |
|---|---|---|
| $P_1$ | 0.0 msec | 6 ms |
| $P_2$ | 0.5 msec | 4 ms |
| $P_3$ | 1.0 msec | 10 ms |

Find the weighted turnaround time for shortest job first technique and future knowledge technique.

Q5. (a) List the disadvantages of paged memory management techniques and segmentation memory management techniques. (5)

(b) A variable partition memory system has given partition size – 30K, 50K, 10K, 5K, and 20K. A new process of 15K is to be loaded. Which partition would be appropriate using first fit, best fit and worst fit techniques. Explain your answer in detail. (5)

Q6. (a) Is disk scheduling other than FCFS scheduling useful in a single user environment? Explain your answer. (4)

(b) Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. Initially head is at cylinder 143 and the previous request was at cylinder 125. Consider the following head requests:

86, 1470,913 ,1774 ,948 ,1509 ,1022 ,1750 ,130.

Determine the total distance for the following disk scheduling algorithms:

(i) C-SCAN
(ii) LOOK (6)

Q7. List the differences between Linux Operating System and Windows XP operating system in view of operating system's resources. (10)

Q8. Write short notes on any two: (2X5=10)

(a) Cryptography

(b) Block Multiplexing

(c) Belady's Anomaly

(d) System Calls