Operating System

QP Code : 25255

(3 Hours)

Note: [80 Marks]

Question No.1 is Compulsory

Attempt any four Question between Question No.2 to 7

Q 1. **A)** What is an Operating System? Explain the components and services. [10]

B) Consider the following snapshot of a system [10]

Processes	Allocation			MAX			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P0	0	1	0	7	5	3	3	3	2
P1	0	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3				

Using Banker's algorithm

a) What is the context of matrix need?

b) Is the system in safe state? Give the sequences.

c) If the request from P1 arrives for (1, 0, 2) can the request be granted immediately?

Q 2. **A)** Consider the head of disk having 0-199 cylinders and currently is on track 100. [08]
Request Queue is 27, 129, 110, 186, 147, 41, 10, 64, 120. What are total head movements of the following algorithms?

      a) SSTF   b) SCAN   c) CSCAN   d) FCFS

B) What do you mean by process? Explain the 5-state process model in detail. [07]

Q 3. **A)** Reference string 6 0 1 2 0 4 3 0 2 6 3 2 0 1 6 is given. How many page faults [08]
will occur for the following algorithms?

    a) LRU, b) FIFO, c) Optimal Replacement.

B) Explain bounded buffer, Reader Writer's, dining philosopher's problem in short. [07]

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Q 4.   **A)**   For the process listed in the table, draw Gantt chart and find the average waiting   [08]

time and average turnaround time using: **muadda.com**

    a) FCFS, b) SJF(both preemptive and non-preemptive), c) Round Robin

    (quatum=2)

Process	Arrival Time	Processing Time
A	0	2
B	2	7
C	4	5
D	7	3

    [07]

   B)   Explain the disk structure with the diagram. What do you mean by disk

reliability?   **muadda.com**

Q 5.   **A)**   Explain the file allocation methods in details with suitable example.   [08]

   B)   What do you mean by protection? Explain the access matrix.   [07]

Q 6.   **Write Short Notes(Any Three)**   [15]

   ➤ System softwares   ➤ Context-switching

   ➤ Process control block   ➤ DMA

   ➤ Internal & External Fragmentation

    [08]

Q 7.   **A)**   What is deadlock? What are the necessary and sufficient conditions for deadlock

occurrence?

   B)   What is the program threat? Explain the authentication and list the possible   [07]

benefits.

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