SEAT No.

[51]

SARDAR PATEL UNIVERSITY
M. Sc. (Information Technology)
Semester – I
PS01CINT05 (Operating System Concepts)
30ᵀᴴ October, 2018, Tuesday

Marks: 70

Time: 10:00 a.m. to 1:00 p.m.

Note : Answers of all the questions (including multiple choice questions) should be written in the provided answer book only.

Q-1 Pick up the most appropriate answer from the given alternatives and write in your answer book. (8)

(1) In the blocked state
(a) the process which is running is found
(b) the processes waiting for I/O are found
(c) the processes waiting for processor are found
(d) None of the above

(2) Which is not the state of the process?
(a) Blocked   (b) Running   (c) Ready   (d) Privileged

(3) Which technique was introduced because a single job could not keep both the CPU and I/O devices busy?
(a) Time-Sharing   (b) Spooling   (c) Multiprogramming   (d) Preemptive Scheduling

(4) PCB stands for _____
(a) Program Control Block
(b) Process Control Block
(c) Process Communication Block
(d) None of the above

(5) Which directory implementation is used in most Operating Systems?
(a) Single level directory Structure
(b) Two Level directory structure
(c) Tree directory structure
(d) Acyclic directory structure

(6) _____ is a high level abstraction over semaphore.
(a) Message Passing   (b) Mutual Exclusion   (c) Shared Memory   (d) Monitor

(7) Which of the following memory unit that processor can access more rapidly
(a) Cache memory   (b) Main memory   (c) Virtual memory   (d) Read only memory

(8) The time taken by the disk arm to locate the specific address of a sector for getting information is called _____.
(a) Rotational Latency   (b) Seek Time   (c) Search Time   (d) Positioning Time

Q-2 Attempt the following: (ANY SEVEN) (14)

1) List out roles of operating systems.
2) Define: Interrupt Handling, System Call
3) What is Operating System? List out types of Operating System.
4) Write a note on PCB.
5) What is context switch? Explain in brief with diagram.
6) What is the use of base register and limit register in Multiprogramming?
7) Define: Demand Paging, Dynamic Linking
8) What do you mean by File? List out and define File Attributes.
9) Explain in brief operations that are to be performed on a Directory.

[PTO]

Q-3 **(a)** List out various Structure of Operating System. Explain Layered structure in detail. **[6]**

(b) List and explain in brief services provided by OS. **[6]**

OR

(b) What do you mean by System Call? What is the difference between System Call and API?

Q-4 **(a)** What is monitor? Explain advantages of Monitor over Semaphore. Is it better than Semaphore? **[6]**

(b) Solve the below example using Banker's Algorithm. Find out is system in safe state? **[6]**

5 Processes and 4 Resource Types are there.

Resources: R1 (6 instances), R2 (7 instances), R3(12 instances) and R4(12 instances)

Process	Allocation				Max			
	R1	R2	R3	R4	R1	R2	R3	R4
P0	0	0	1	2	0	0	1	2
P1	2	0	0	0	2	7	5	0
P2	0	0	3	4	6	6	5	6
P3	2	3	5	4	4	3	5	6
P4	0	3	3	2	0	6	5	2

OR

(b) What is the difference between long-term scheduler and short term scheduler? What do you mean by mid-term scheduler?

Q-5 **(a)** Write a short note on Address Binding. **[6]**

(b) What is Paging? Explain how it is implemented. List its advantages. **[6]**

OR

(b) What do you mean by Page Replacement? Explain in brief the LRU page replacement algorithm with suitable example.

Q-6 **(a)** What is Disk Scheduling? Explain any two disk scheduling algorithm. **[6]**

(b) Explain various RAID levels in brief. **[6]**

OR

(b) List pieces of Information associated with an open file. Explain how locking facility is used for open files.

——×——