

[R15105]

M.C.A. DEGREE EXAMINATIONS**FIRST SEMESTER****Paper - V : OPERATING SYSTEMS***(W.E.F. 2020-21 Admitted Batch)***Time : 3 Hours****Maximum : 75 Marks****SECTION - A****Answer ALL Questions.****(4×15=60)**

1. a) Explain in detail the role of Operating system as a resource manager.
 b) What are the advantages of inter-process communication? How communication takes place in a shared-memory environment.

(OR)

- c) Describe process life cycle with the help of diagram.
 d) Consider the following four processes, with the length of the CPU burst time given in Milliseconds.

Process	Arrival Time (ms)	Burst Time(ms)
P ₁	1	6
P ₂	1	5
P ₃	2	5
P ₄	2	3

Find Average Waiting time and Turnaround time for given Process using FCFS and SJF Algorithms?

2. a) What is Semaphore? How can we achieve the synchronization using semaphore for Producer consumer problem?
 b) Explain the Resource-Allocation Graph Algorithm for deadlock prevention.

(OR)

- c) What are four necessary conditions to occur a deadlock? Explain banker's algorithm.
 d) What is a Critical Section? Discuss solution of the Critical Section Problem.

3. a) Discuss the procedure for handling the page fault in demand paging.
 b) What is virtual memory? Discuss the benefits of virtual memory techniques.

(OR)

- c) Explain various file access methods with suitable examples.
 - d) What is structure of page table? Discuss the analysis models of paging with caching.
4. a) Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The current head Position is at cylinder 143. The queue of pending requests is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. What is the total distance that the disk arm moves to satisfy all the pending requests for each of the following Disk scheduling algorithms?
- i) SSTF
 - ii) SCAN
 - iii) FCFS

(OR)

- b) Compare the performance of write operations achieved by a RAID level 5 organization with that achieved by a RAID level 0 organisations ?
- c) Explain the protection mechanism illustrating the use of protection domain and access Control list.

SECTION-B

Answer any FIVE Questions.

(5×3=15)

5. a) Write about virtual machines.
- b) Define Cooperating process? What is the environment need in cooperating process?
- c) How parameters can be passed to system calls?
- d) Define Process synchronization.
- e) What is a Monitor? Give the schematic view of the basic monitor.
- f) What is difference between internal and external fragmentation?
- g) What is Access Matrix?
- h) Describe role-based access control.
-