

M.C.A [SEM – II]

Operating Systems

(DEC- 2017)

Q.P. Code :02871

[Time: Three Hours]

[Marks:100]

Please check whether you have got the right question paper.

- N.B:
1. Question.No.1 is compulsory.
 2. Attempt any four from remaining six questions.

1. (a) What is Operating System? Explain in detail the various services provided by Operating System. (10)
(b) What are external and internal fragmentations? Discuss the techniques to overcome fragmentations. (10)
2. (a) For the process listed in the following table, (10)
Draw Gantt Chart illustrating process execution and calculate Average Waiting Time
 1. First Come First Served (FCFS)
 2. Shortest Job First (SJF) in both conditions preemptive and non-preemptive
 3. Round Robin (Quantum = 2)

Process	Arrival Time(ms)	Burst Time(ms)
P1	0	5
P2	1	3
P3	1	4
P4	2	2

- (b) Explain the detail structure of Process Control Block with the help of suitable diagram and also gives the details of its component. (10)
3. (a) What is the difference between contiguous and linked allocation of file systems. (10)
(b) Draw a diagram for Five State Process Model and explain each state transition in it. (10)
4. (a) What is semaphore? Explain different types of semaphore. (10)
(b) Consider the pages are referenced in the following sequence : (10)
2, 3, 3, 1, 5, 2, 4, 5, 3, 2, 5, 2, 3
How many page faults will occur for the following page replacement algorithms, assuming three frames?
 1. FIFO Page Replacement
 2. LRU Page Replacement
 3. Optimal Page Replacement

TURN OVER

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5. (a) Discuss in detail the different threats to security of system. (10)
- (b) What is process and thread? Explain the relationship between process and thread. Differentiate between user level threads and kernel level threads. (10)
6. (a) How Bankers Algorithm can be used to avoid a deadlock? (10)
- (b) Differentiate between First Come First Served (FCFS) and Shortest Seek Time First (SSTF) disk scheduling algorithm with the help of an example. (10)
7. Write Short Notes on **any four** :- (20)
1. Context switching
 2. Buffering
 3. Features of Linux OS
 4. Buddy system
 5. Access matrix model of protection
 6. Concurrency control
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