

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-IV (NEW) EXAMINATION – WINTER 2020****Subject Code:3140702****Date:09/02/2021****Subject Name:Operating System****Time:02:30 PM TO 04:30 PM****Total Marks:56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- | | Marks | | | | | | | | | | | | | | | |
|--|--------------|--------------|------------|----|---|----|----|---|---|----|---|---|----|---|---|--|
| Q.1 (a) Explain structure of Operating System. | 03 | | | | | | | | | | | | | | | |
| (b) Draw and explain five state Process State Transition Diagram. | 04 | | | | | | | | | | | | | | | |
| (c) Solve following example by FCFS and SJF CPU scheduling algorithm. Draw Gantt Chart and calculate Average Waiting Time and Average Turnaround time. | 07 | | | | | | | | | | | | | | | |
| <table border="1" style="margin-left: 40px; border-collapse: collapse;"> <thead> <tr> <th>Process</th> <th>Arrival Time</th> <th>Burst Time</th> </tr> </thead> <tbody> <tr> <td>P0</td> <td>0</td> <td>10</td> </tr> <tr> <td>P1</td> <td>1</td> <td>6</td> </tr> <tr> <td>P2</td> <td>3</td> <td>2</td> </tr> <tr> <td>P3</td> <td>5</td> <td>4</td> </tr> </tbody> </table> | Process | Arrival Time | Burst Time | P0 | 0 | 10 | P1 | 1 | 6 | P2 | 3 | 2 | P3 | 5 | 4 | |
| Process | Arrival Time | Burst Time | | | | | | | | | | | | | | |
| P0 | 0 | 10 | | | | | | | | | | | | | | |
| P1 | 1 | 6 | | | | | | | | | | | | | | |
| P2 | 3 | 2 | | | | | | | | | | | | | | |
| P3 | 5 | 4 | | | | | | | | | | | | | | |
| Q.2 (a) State features of distributed operating system. | 03 | | | | | | | | | | | | | | | |
| (b) Explain principle of concurrency in brief. | 04 | | | | | | | | | | | | | | | |
| (c) Explain Dining philosopher problem and its solution using semaphore. | 07 | | | | | | | | | | | | | | | |
| Q.3 (a) Explain pure virtualization in brief. | 03 | | | | | | | | | | | | | | | |
| (b) What is deadlock? List the conditions that lead to deadlock. | 04 | | | | | | | | | | | | | | | |
| (c) State the need of demand paging. Explain the steps to handle a page fault using demand paging. | 07 | | | | | | | | | | | | | | | |
| Q.4 (a) Explain Access Control List in brief. | 03 | | | | | | | | | | | | | | | |
| (b) Write a Shell script to find Factorial of a given number. | 04 | | | | | | | | | | | | | | | |
| (c) Disk requests come in to the disk driver for cylinders 10, 22, 20, 2, 40, 6, and 38, in that order. A seek takes 6 msec per cylinder moved. How much seek time is needed for
(a) First-come, first served.
(b) Closest cylinder next.
In all cases, the arm is initially at cylinder 20. | 07 | | | | | | | | | | | | | | | |
| Q.5 (a) Explain different services provided by operating system. | 03 | | | | | | | | | | | | | | | |
| (b) Explain process control block with diagram. | 04 | | | | | | | | | | | | | | | |
| (c) Explain Thread Scheduling with suitable example. | 07 | | | | | | | | | | | | | | | |
| Q.6 (a) Give the difference between multitasking OS and multiprogramming OS. | 03 | | | | | | | | | | | | | | | |
| (b) Explain Mutual Exclusion in brief. | 04 | | | | | | | | | | | | | | | |

- (c) Explain producer-consumer problem and solve it using semaphores. **07**
Write pseudo code for the same. www.FirstRanker.com www.FirstRanker.com
- Q.7**
- (a) Explain need of Virtual Machines. **03**
 - (b) How Resource Trajectories can be helpful in avoiding the deadlock? **04**
 - (c) Given memory partitions of 100 KB, 500 KB, 200 KB, 300 KB and 600 KB (in order), how would each of the first-fit, best-fit and worst-fit algorithms place processes of 212 KB, 417 KB, 112 KB and 426 KB (in that order) ? Which algorithm makes the most efficient use of memory? **07**
- Q.8**
- (a) Write a note on Generic Security Attacks. **03**
 - (b) Explain Unix Commands – grep, sort, cat, chmod. **04**
 - (c) Explain RAID level system in detail. **07**

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