

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER- IV EXAMINATION – SUMMER 2020****Subject Code: 2140702****Date: 26/10/2020****Subject Name: Operating System****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

- Q.1** (a) Define following terms: **03**  
       1) Starvation  
       2) Process  
       3) Mutual Exclusion
- (b) Explain the different types of operating system. **04**  
 (c) Explain PCB with all parameters in details. **07**
- Q.2** (a) Explain different services provided by operating system. **03**  
 (b) Differentiate between process and thread. **04**  
 (c) Explain the IPC Problem known as Dining Philosopher Problem. **07**
- OR**
- (c) Explain IPC Problem – Readers & Writers Problem. **07**
- Q.3** (a) Discuss in brief different types of scheduler. **03**  
 (b) What is deadlock? Define necessary conditions that lead to deadlock. **04**  
 (c) Assume you have following jobs to execute with one processor. Apply shortest job first with preemptive scheduling algorithm. **07**

Process	Burst time	Arrival Time
0	8	0
1	4	1
2	9	2
3	5	3

- a. Draw Gantt chart for process execution.
- b. What is the average turnaround time?
- c. What is the average wait time?

**OR**

- Q.3** (a) List parameters to be considered while selecting scheduling algorithms. **03**  
 (b) What is semaphore? Describe types of semaphore. **04**  
 (c) Explain the use of Banker's algorithm for multiple resources for deadlock avoidance with illustration. **07**
- Q.4** (a) Differentiate between preemptive and non preemptive scheduling algorithm. **03**  
 (b) Define deadlock. Describe deadlock prevention in detail. **04**  
 (c) Write short note: RAID levels. **07**

**OR**

- Q.4** (a) Explain file attributes in detail. **03**  
(b) Explain the following UNIX commands **04**  
1. Grep  
2. Chmod  
(c) What is Paging? Explain paging mechanism in MMU with example. **07**

- Q.5** (a) What is thrashing? Explain it with respect to degree of multiprogramming. **03**  
(b) Define fragmentation. Describe types of fragmentation. **04**  
(c) Explain continuous memory allocation algorithms: **07**  
1) First-fit 2) Best-fit 3) Worst-fit

**OR**

- Q.5** (a) Describe any one page replacement algorithm. **03**  
(b) Explain working set model. **04**  
(c) Explain any two File Allocation Methods from the following: (i) Contiguous Allocation (ii) Linked Allocation (iii) Indexed Allocation **07**

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