

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME – SEMESTER I (NEW) – • EXAMINATION – WINTER - 2018**

**Subject Code: 3710218****Date: 03/01/2019****Subject Name: Operating System Design****Time: 02:30 PM to 05:00 PM****Total Marks: 70****Instructions:**

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

- Q.1** (a) Explain in details regarding types of Advanced Operating Systems. **07**  
 (b) What do you mean by system call? Also discuss different types of system calls. **07**
- Q.2** (a) Explain Deadlock Prevention and Avoidance strategy. **07**  
 (b) Explain Readers-Writers process synchronization problem and also provide the Semaphore solution for that. **07**
- OR**
- (b) Explain Dining Philosopher process synchronization problem and also provide the Semaphore solution for that. **07**
- Q.3** (a) Explain the following terms in details. **07**  
 1) Multiprocessor 2) Monitor 3) Real Time System  
 (b) What is process abstraction and process management? Explain in detail. **07**
- OR**
- Q.3** (a) Explain Direct Memory Access in I/O management. **07**  
 (b) Explain various file allocation methods. **07**
- Q.4** (a) Explain the difference between Security and Protection. And also explain Lampson's Access Matrix. **07**  
 (b) Perform the disk scheduling algorithms – FCFS, SSTF, SCAN, C-SCAN on following request queue (0-199) 98, 183, 37, 122, 14, 124, 65, 67. Head pointer is at 53 **07**
- OR**
- Q.4** (a) Explain the concept of virtual memory also explain various page replacement algorithms **07**  
 (b) List out the various security goals and explain Trust model & Threat Model. **07**
- Q.5** (a) Define distributed operating system. Explain its design issues. **07**  
 (b) Explaining Thrashing in Distributed Shared Memory. **07**
- OR**
- Q.5** (a) Describe distributed approach for implementing mutual exclusion in distributed operating system. **07**  
 (b) What is fault tolerance in Multiprocessor Operating Systems? State the significance and its use. **07**

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