

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA Integrated – SEMESTER – IV • EXAMINATION – SUMMER 2018****Subject Code: 4440603****Date: 08-May-2018****Subject Name: Operating Systems (OS)****Time: 10.30 am to 1.00 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) Answer following in short. 07**
- (1) Discuss the possible reasons for process migration.
 - (2) Define F-SCAN policy.
 - (3) What is the relation between FIFO and clock page replacement algorithm?
 - (4) List characteristics of Real time Operating system.
 - (5) What delay elements are involved in a disk read or write?
 - (6) What is access time?
 - (7) Define Race Condition.
- (b) (1) What is Process control Block? 03**
- (2) What is thread? Discuss the importance of thread in multiprocessing. 04**
- Q.2 (a) What is process? Explain the process state transition diagram with suspend state. 07**
- (b) Define Semaphore, What are the permissible operations with Semaphore and how they are used to achieve the mutual exclusion 07**
- OR**
- (b) Define the term Deadlock. Discuss the necessary and sufficient conditions for a Deadlock to occur. State the general approaches to deal with Deadlock situation 07**
- Q.3 (a) What is mutual exclusion? Define Semaphore, the permissible operations with Semaphore and how they are used to achieve the mutual exclusion 07**
- (b) What is segmentation? How it differs with paging? Explain address translation in segmentation with paging. 02 05**
- OR**
- Q.3 (a) Define Reader/Writer Problem. What are the conditions generally associated with this problem? How can this problem be solved using Semaphores? 07**
- (b) (1) Differentiate between Reusable and consumable resources. 02**
- (2) Discuss Gang Scheduling and Load Sharing with its advantages and Disadvantages. 05**
- Q.4 (a) What is paging? Explain the following terms : 07**
- (i) page
 - (ii) frames
 - (iii) page table
- Also explain with examples how Logical –to Physical Address Translation

takes place

- (b) Briefly explain Fixed and dynamic partitioning with advantaged and disadvantages. Give names of placement algorithm used for fixed and dynamic partitioning. **07**

OR

- Q.4 (a)** What is segmentation? List advantages of segmentation. Explain in brief clock policy **07**

- (b) What is Translation Lookaside Buffer? Explain the Paging with the use of TLB. **07**
What role the main memory cache plays with the Virtual Memory Management using TLB?

- Q.5 (a)** Briefly Define FCFS and Round-Robin processor scheduling. **07**

- (b) List the difference between the following : **07**

(i) field and a record

(ii) File and a database.

Also explain the file management system?

OR

- Q.5 (a)** List and Briefly define four techniques for thread scheduling. **07**

- (b) Explain RAID and its level 0-6 in detail. **07**
