

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA INTEGRATED– SEMESTER IV - EXAMINATION –WINTER-2022

Subject Code: 4440603**Date: 20/12/2022****Subject Name: Operating Systems****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.

- Q.1 (a) Do as directed: 07**
1. Interrupt
 2. Realtime Operating System
 3. Discuss the possible reasons for process migration.
 4. Define Race Condition.
 5. Operating system.
 6. Cache memory.
 7. Middleware.
- (b) What is Process? List and explain the different reasons for process creation. 07**
- Q.2 (a) What is semaphore? Explain primitives of 2 types of semaphore. 07**
- (b) Describe the necessary condition for deadlock occurrence. Discuss the deadlock avoidance using Banker's algorithm. 07**
- OR**
- (b) What is multithreading? Explain in brief KLT and ULT with its advantages and disadvantages. 07**
- Q.3 (a) Write a short note on Banker's Algorithm with suitable example. 07**
- (b) What is mutual exclusion? Define Semaphore, the permissible operations with Semaphore and how they are used to achieve the mutual exclusion. 07**
- OR**
- Q.3 (a) What is semaphore? Give and explain the algorithm of producer/consumer Problem with bounded using general semaphore. 07**
- (b) (1) Differentiate between Reusable and consumable resources. 04**
- (2) Discuss Gang Scheduling and Load Sharing with its advantages and Disadvantages. 03**
- Q.4 (a) What is segmentation? How it differs with paging? Explain address translation in segmentation with paging. 07**
- (b) What is I/O Communication? Explain I/O Communication Techniques in detail. 07**
- OR**
- Q.4 (a) How do you classify the different approaches for Real-time scheduling? State various Real-time scheduling techniques available and discuss any one in detail. 07**

- (b) Define virtual memory. Compare LRU, FIFO and Clock page replacement policies with suitable example. **07**
- Q.5** (a) How do you classify the different approaches for Real-time scheduling? State various Real-time scheduling techniques available and discuss any one in detail. **07**
- (b) Name the File allocation methods available in File Management. Explain in detail all methods **07**

OR

- Q.5** (a) Define client server computing and explain the classes of client server applications and compare it with three tier architecture. **07**
- (b) Explain RAID and its level 0-6 in detail. **07**
