

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA INTEGRATED - SEMESTER- IV EXAMINATION – SUMMER 2015**

**Subject Code: 4440603**

**Date: 15/05/ 2015**

**Subject Name: Operating Systems**

**Time: 10:30 a.m. to 1:00 p.m.**

**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: 14**
1. What is Jacketing?
  2. Define Dispatcher.
  3. \_\_\_\_\_ is a special type of programming language used to provide instructions to the monitor.
  4. What is a critical section?
  5. A \_\_\_\_\_ resource is one that can be safely used by only one process at a time and is not depleted by that use.
  6. Chunks of a process are known as \_\_\_\_\_.
  7. Define Thrashing.
  8. Define turnaround time.
  9. \_\_\_\_\_ is a characteristic that refers to the ability of a system to fail in such a way as to preserve as much capability and data as possible.
  10. Define Seek time.
  11. A \_\_\_\_\_ system is that set of system software that provides services to users and applications in the use of files.
  12. Define Cluster.
  13. The measure of how much work is being performed per unit of time is called as \_\_\_\_\_.
  14. What is internal fragmentation?
- Q.2 (a) Define Operating Systems. What are the objectives and functions of OS? 07**
- Q.2 (b) Discuss in detail, one and two suspended state process models. 07**
- OR**
- Q.2 (b) What is Monitor? Explain the solution to the Bounded-Buffer Producer/Consumer problem using a Monitor. 07**
- Q.3 (a) What is thread and multithreading? Describe in brief KLT and ULT with its advantages and disadvantages. 07**
- (b) Discuss Dining Philosophers Problem and its solution using semaphore. 07**
- OR**
- Q.3 (a) Discuss in detail principles of Deadlock. 07**
- (b) What is memory partitioning? Discuss its types, with problems and solutions. 07**
- Q.4 (a) What is the principle need of a virtual memory? Discuss replacement algorithms of virtual paging for sequence: 2 3 2 1 2 5 4 3 1 2 5 4. 07**
- (b) What is TLB? Explain the purpose of TLB in detail. 07**
- OR**
- Q.4 (a) What is virtual paging? Explain the need of Inverted Page Table for virtual paging mechanism. 07**

(b) Consider the following set of processes

07

| Process | Arrival Time | Service Time |
|---------|--------------|--------------|
| A       | 0            | 3            |
| B       | 2            | 6            |
| C       | 4            | 4            |
| D       | 6            | 5            |
| E       | 8            | 2            |

Implement the FCFS, SPN and RR ( Q=1) techniques of scheduling  
Find out the finish time and turnaround time for each process.

**Q.5 (a)** What is multiprocessor thread scheduling? Discuss types of processor assignments. **07**

**(b)** What is disk scheduling? List disk scheduling policies and explain any two with illustrations and calculation of Average seek length for both the policies. **07**

**OR**

**Q.5 (a)** What is secondary storage management? Discuss with neat diagrams all the file allocation methods. **07**

**(b)** Explain different classes of Client Server architecture. What do you mean by three tier Client Server architecture? **07**

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