

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA– SEMESTER –III EXAMINATION –SUMMER-2019

Subject Code:2630004

Date: 20-05-2019

Subject Name: Operating Systems

Time:02.30 pm to 5.00 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) List and explain the objectives and functions of operating system. **03**
(b) List and explain the basic elements of operating system. **04**
(c) Explain the essential properties of **07**
1) Batch System
2) Time sharing
3) Real time
4) Parallel
5) Distributed
6) Embedded
7) Handheld
- Q.2** (a) What is thread? Explain classical thread model. **07**
(b) Define process and Explain process states in details with diagram. **07**
OR
(b) Explain the process state transition diagram used in multiprogramming **07**
environment. Describe the fields in a process control block (PCB).What is
switching overhead?
- Q.3** (a) Explain the following process scheduling algorithm. **07**
1) Priority scheduling
2) Shortest job first scheduling.
(b) What are critical sections? Why mutual exclusion required? Explain any two **07**
methods of achieving mutual exclusion in detail.
OR
- Q.3** (a) Explain the effect of increasing the time quantum to an arbitrary large Number **07**
and decreasing the time quantum to an arbitrary small number for round robin
scheduling algorithm with suitable example?
(b) Explain the following term related to IPC: **07**
1) Race condition
2) Critical region.
- Q.4** (a) What are the differences of internal and external memory Fragmentation? **07**
(b) Discuss the following related to disk space management. **07**
1) Block size
2) Keeping track of free blocks.

OR

- Q.4 (a)** Explain following allocation algorithm. **07**
1) First fit
2) Best fit
- (b)** Write a short note on: remote procedure call. **07**
- Q.5 (a)** Describe various file access methods. **07**
(b) What is page fault and how it is handled? **07**
- OR**
- Q.5 (a)** What is thrashing and explain the methods to avoid thrashing? **07**
(b) Explain implementation of producers/Consumers problem using monitor. **07**
