

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA - SEMESTER-III • EXAMINATION – WINTER 2013****Subject Code: 2630004****Date: 11-12-2013****Subject Name: Operating Systems (OS)****Time: 02.30 pm - 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) Define Terms: i) Translation Lookaside Buffer (TLB) ii) Deadline Scheduling **08**
 iii) Race Condition iv) Index register, Base and Limit Registers
- (b) Draw Seven State Process Diagram. **02**
- (c) Do as Directed. **01**
 i) What is access time? **01**
 ii) List Objectives of Scheduling. **01**
 iii) List characteristics of Real time Operating system. **01**
 iv) List 3 major functions of Operating system. **01**
- Q.2** (a) i) Explain in brief fat and thin client. **03**
 ii) Differentiate between
 a) Batch Processing and Serial Processing **02**
 b) Micro Kernel and Monolithic Kernel **02**
- (b) i) What is Process control Block? **03**
 ii) What is thread? Discuss the importance of thread in multiprocessing. **04**
- OR**
- (b) i) List steps involved in process switch and list reasons for process state change. **03**
 ii) Explain in brief User Level thread with its advantages and disadvantages. **04**
- Q.3** (a) State Producer/Consumer problem. How it is different from Readers/Writer problem. **07**
- (b) i) Discuss 4 necessary conditions for deadlock. **02**
 ii) Explain in brief Deadlock avoidance with its advantages and disadvantages. **05**
- OR**
- Q.3** (a) Explain in detail Monitor. How cwait and csignal are different from those of semaphore? How mesa monitor is different from monitor? **07**
- (b) i) Differentiate between Reusable and consumable resources. **02**
 ii) Discuss Gang Scheduling and Load Sharing with its advantages and disadvantages. **05**
- Q.4** (a) List various benefits of dynamic partitioning over fixed partitioning. Why we need compaction? Discuss placement algorithms: Best fit, Next fit and First fit. **07**
- (b) i) Compare FCFS, SPN, SRT and RR scheduling algorithms with reference to following characteristics: **07**
 a) Selection Criteria
 b) Decision Mode
 c) Throughput
 d) Response Time
- OR**
- Q.4** (a) What is segmentation? List advantages of segmentation. Explain in brief clock policy. **07**
- (b) List various pre-emptive scheduling policies. Explain in brief any one. Why Principal design issue is the length of the time quantum or slice used? **07**

- Q.5 (a)** List various file allocation Methods. Explain in brief free space management. **07**
- (b)** i) What is cluster? Discuss benefits of clusters. **04**
ii) What is nonblocking message passing? List limitations of it. **03**
- OR**
- Q.5 (a)** i) Explain in brief SCAN and C-SCAN disk scheduling algorithm with Example. **04**
ii) List contents of directory. Discuss various operations that can be performed on directory in UNIX. **03**
- (b)** Discuss Failure management and Load balancing design issues of clustering. **07**
