

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER– III• EXAMINATION – WINTER • 2015

Subject Code: 2630004

Date: 31/12/2015

Subject Name: Operating Systems (OS)

Time: 10.30 am to 01.00 pm

Total Marks: 70

Instructions:

1. Attempt all the questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1**
- (a) 1. What is a privileged instruction? 07
2. Explain the term – ‘Time slicing’.
3. Define Multithreading.
4. What is the difference between Data registers and Address registers?
5. Explain symmetric multiprocessing.
6. What type of information provided by the File tables?
7. What do you understand by Circular Wait of deadlock prevention?
- (b) 1. Explain the Five – State Process Model. 04
2. Discuss Thread Synchronization. 03
- Q.2**
- (a) 1. Why Variable-allocation policy is preferred over the fixed-allocation policy of resident set size management? 02
2. Justify – “First-come-first-served (FCFS) performs better for long processes than short ones”. 02
3. Why most virtual memory scheme make use of a special high-speed cache for page table entries ? 03
- (b) 1. Why Dynamic Partitioning is better than the fixed partitioning of memory management technique? 04
2. Justify the statement: Segmentation is visible to the programmer and is provided as a convenience for organizing programs and data. 03
- OR**
- (b) 1. Justify – “Prepaging exploits the characteristics of most secondary memory devices”. 02
2. Why some of the frames in main memory be locked? 02
3. Explain Two-Handed Clock Page Replacement Algorithm. 03
- Q.3**
- (a) Discuss Mutual Exclusion using Semaphores. 07
(b) Explain Resource Allocation Denial (known as banker’s algorithm) of Deadlock Avoidance. 07
- OR**
- Q.3**
- (a) Discuss (i) Addressing and (ii) Message Format design issues of message-passing systems. 07
(b) Discuss Deadlock Detection Algorithm with one example. 07
- Q.4**
- (a) Discuss Direct Memory Access (DMA) for performing I/O. 07
(b) Explain (i) Indexed Sequential file organizations and (ii) Portion Size of a file Allocation. 07
- OR**
- Q.4**
- (a) List out and explain I/O Buffering Schemes. 07
(b) What is Record Blocking ? List out and discuss Record Blocking Methods. 07
- Q.5**
- (a) What is Remote Procedure Calls ? Explain in details. 07
(b) Briefly discuss three types of processor scheduling. 07

OR

- Q.5** **(a)** Discuss Load Sharing and Gang Scheduling. **07**
 (b) What is Cluster ? List out benefits of clusters and discuss cluster computer architecture. **07**
