

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2015

Subject Code: 2140702

Date: 03/06/2015

Subject Name: Operating System

Time: 10:30am-1.00pm

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 operating system. Explain the different views of operating system. Also explain types of operating system. **07**
(b) Explain evolution of operating system in detail with suitable diagrams. **07**
- Q.2** (a) (i) Define process. Differentiate between a process and a program. **04**
(ii) Explain different states of a process with a suitable diagram. **03**
(b) Explain threads in brief with its types. What is multithreading? Explain. **07**
- OR**
- (b) Define mutual exclusion. How mutual exclusion can be achieved? Explain. **07**
- Q.3** (a) Explain the IPC Problem known as Dining Philosopher Problem. **07**
(b) Explain Context Switching. Discuss performance evaluation of FCFS (First Come First Serve) & RR (Round Robin) scheduling. **07**
- OR**
- Q.3** (a) What is deadlock? List the conditions that lead to deadlock. How deadlock can be prevented? **07**
(b) Explain the use of Banker's algorithm for multiple resources for deadlock avoidance with illustration. **07**
- Q.4** (a) Explain the following in detail with suitable diagrams: **14**
(i) Swapping (ii) Segmentation.
(iii) Multiprogramming with fixed partitions
(iv) Multiprogramming with Variable Partitions.
- OR**
- Q.4** (a) For the following page reference string: **07**
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
Calculate the page faults applying the following Page Replacement Algorithms for a memory with three frames:
(i) Optimal (ii) LRU (iii) FIFO
(b) Explain the goals of I/O software. **07**
- Q.5** (a) Explain any three Disk Arm Scheduling algorithms with suitable illustrations. **07**
(b) Explain the goals of Operating System Security. **07**
- OR**
- Q.5** (a) Explain any two File Allocation Methods from the following: **07**
(i) Contiguous Allocation (ii) Linked Allocation (iii) Indexed Allocation
(b) Explain Linux kernel and its functions in brief. **07**
