Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV EXAMINATION - WINTER 2015

	•	t Code: 140702 Date:01/01/2016 t Name: Operating System	
	tructio 1	Attempt all questions.Make suitable assumptions wherever necessary.	
Q.1	(a)	(i) What is Operating System? Give functions of Operating System.(ii) Explain "5 State" Process State Transition Diagram with illustration.	07
	(b)	Write short notes on: Real Time Operating System, Timesharing Operating System.	07
Q.2	(a)	Answer the following. (i) Define: Race Condition, Mutual Exclusion, Throughput, Turnaround Time. (ii) Give the functions of following unix commands. cat, cp, grep.	07
	(b)	Define Process and Thread. What is Process Control Block? Explain its various entries with their usefulness.	07
	(b)	Five jobs A through E arrive at a computer center with following details Job Arrival_Time CPU_Time A	07
Q.3	(a)	What is Semaphore? Give the implementation of Producers-Consumers Problem using Semaphore.	07
	(b)	Explain various Disk Scheduling algorithms with illustration.	07
Q.3	(a) (b)	OR Give the implementation of Readers-Writers Problem using Semaphore. Explain the use of Banker's Algorithm for multiple resources for Deadlock Avoidance with illustration.	07 07
Q.4	(a) (b)	Explain Files and Directory Management in UNIX Operating System. Why Page Replacement is necessary? Compare Optimal, LRU and FIFO page replacement algorithms with illustration. OR	07 07
Q.4	(a)	Explain Virtual Memory Management with Paging in detail. Explain how Virtual Address is translated into Physical Address. Give the advantages of Paging over Segmentation.	07

	(b)	Explain the following in brief. (i) Contiguous and Linked List Allocation for implementing File System. (ii) File Attributes and File Operations.	07
Q.5	(a)	Write short notes on following:	07
		(i) Security Threats of Operating System.	
		(ii) Access metrics mechanism.	
	(b)	Write following Shell scripts in Unix/Linux:	07
		(i) To find Factorial of a given number.	
		(ii) For generating students' mark sheet. Calculate "CLASS" also.	
		OR	
Q.5	(a)	What are the use of device driver & controller in OS? Explain.	07
	(b)	Explain UMA and NUMA multiprocessors.	07
