Paper Code: CS-401	Roll No.									

B.Tech.
(SEM IV) EVEN SEMESTER EXAMINATION, 2015-16
OPERATING SYSTEMS

[Time: 3 hrs.] **[Max. Marks: 100]**

Note- Attempt All questions. All questions carry equal marks.

1. Attempt any two of the followings:- **[10x2=20]**

   (a) Define the term operating system. What are the different functions of operating system?
   (b) Explain the following in brief:
   (i) Multiprogramming System (ii) Multiprocessing System
   (ii) Multithreading (iv) Batch Processing
   (c) What is an interrupt? How does an operating system handle an interrupt? Discuss different types of interrupt with example.

2. Attempt any two of the followings:- **[10x2=20]**

   (a) What do you understand by concurrent processes? Discuss producer–consumer problem.
   (b) (i) Explain semaphores with a suitable example.
   (ii) Define critical section. Also write a solution to the critical section problem.
   (c) What is a deadlock? Discuss deadlock prevention strategies.

3. Attempt any two of the followings:- **[10x2=20]**

   (a) Consider the following snap-shot of a system:

	Allocation			Max.			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

   (i) Obtain the need matrix.
   (ii) Is the system in a safe state? If a state is safe show how it is possible for all processes to complete.

   (b) Explain the multilevel feedback queues scheduling algorithm.
   (c) (i) Discuss different states of process with the help of state diagram.
   (ii)What are the performance criteria of a CPU scheduling algorithm? Discuss.

4. Attempt any two of the followings:- **[10x2=20]**

   (a) Consider the following page reference string:
   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3
   Assume three page frames, how many page faults would occur for
   (i) FIFO (ii) LRU (iii) OPTIMAL?
   (b) Explain the multiprogramming with fixed partitions and variable partitions with suitable examples.
   (c) Describe the following:
   (i) Paging (ii) Thrashing and Locality.

5. Write short notes on any two of the followings:- **[10x2=20]**

   (a) Disk scheduling algorithm with example.
   (b) File System.
   (c) Access matrix and issues of its implementation.