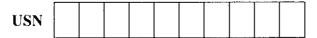
8



First Semester M.Tech. Degree Examination, February 2013 **Advances in Operating Systems**

Max. Marks: 100 Time: 3 hrs

Time: 3 hrs. Max. Marks: 10		
		Note: Answer any FIVE full questions.
1	a. b.	Describe the essential properties of the following operating systems: i) Time sharing ii) Embedded systems iii) Personal computer. (08 Marks) Suppose that a multiprogrammed system has a load of N processes with individual execution times of t_1, t_2, \ldots, t_N . How would it be possible that total execution time (T) be $T > t_1 + t_2 + \ldots + t_N$? What could cause the T to exceed the sum of the individual process execution times? (04 Marks) Explain the two methods of resources sharing used to create the abstract machines. Give two examples.
2	a. b.	Explain the OS primitive functions FORK(), QUIT() and JOIN() with fragment code example for each. (08 Marks) Distinguish between sequential computation and multithreaded computation. Using block diagram, represent the various objects of single threaded and multithreaded process. (08 Marks) Explain the POSIX file along with any three POSIX file command. (04 Marks)
3	a.b.c.d.	What does a mode bit do? Why are there more than one processor modes? Explain the two techniques by which a program executing in "User mode" can request the kernel's services. Discriminate 'Trusted software' from 'Untrusted software'. With neat block diagram, explain the device management component of any generic operating system. (05 Marks)
4	a. b.	With the help of neat block diagrams, explain the four software modularization approaches used to implement different operating systems. (10 Marks) Explain one important advantage and one implementation challenge of a layered kernel in an OS. Describe the layered architecture of Dijkstra's THE system. (10 Marks)
5	a. b.	List and explain the five issues that distinguish distributed operating system from network operating system. (10 Marks) Explain the four different mechanisms by which a user process can perform IPC using the Linux kernel. (10 Marks)
6	a. b.	Draw the block diagram of various components of the virtual memory manager of Linux OS and explain its general characteristics. (10 Marks) Represent the process and thread descriptors of Windows NT using a suitable block diagram and explain the NT executive process manager. (10 Marks)
7	a.	With a neat diagram, explain the socket functions used for elementary TCP/IP client/server. (12 Marks)
	b.	Explain the distributed algorithm for mutual exclusion, with an example. (08 Marks)

- Write short notes on the following: b. Process migration Linux Clusters

 - Mach OS kernel-based memory manager d. OS implementation considerations. (20 Marks)