

**III B.Tech I Semester Regular Examinations, November 2009
OPERATING SYSTEMS****(Electronics & Computer Engineering)****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
All Questions carry equal marks**

1. Define Real-time operating systems. Explain their importance in various applications. [16]
2. Draw and explain about five-state process model. [16]
3. Explain the solution for the critical section problem for multiple processes. [16]
4. What are the different LINUX spinlocks? Explain. [16]
5. (a) A computer has four page frames. The time of loading, time of last access and the R and M bits for each page are as shown below (the times are in clock ticks):

Page	Loaded	Last ref	R	M
0	126	279	0	0
1	230	260	1	0
2	120	272	1	1
3	160	280	1	1

- i. Which page will FIFO replace
- ii. Which page will LRU replace
- iii. Which page will second chance replace
- (b) In a fixed-partitioning scheme, what are the advantages of using unequal-size partitions? [9+7]
6. (a) Discuss the design objectives of I/O facility.
- (b) What is meant by cycle stealing? Explain.
- (c) Explain I/O channel and I/O processor. [5+5+6]
7. Explain the reliability and protection mechanisms followed in UNIX file system. [16]
8. (a) Explain in detail active threats.
- (b) Discuss about Protection of memory. [8+8]

Code No: V3148/R07

Set No. 2

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1. Time Sharing Operating Systems are logical extension of Multiprogramming Operating Systems. Discuss. [16]
2. Discuss various issues of Multithreading programs. [16]
3. How can Semaphores be used to achieve mutual exclusion? Explain with an example. [16]
4. What are the different LINUX spinlocks? Explain. [16]
5. Explain about address binding for a user program and discuss multi step processing of a user program. [16]
6. What is starvation? Which of the following algorithms could result in starvation FCFS, SPN, SRT and Priority. How to overcome the problem of starvation? Discuss. [16]
7. (a) Describe the key features of NTFS.
(b) Discuss file allocation method in UNIX file. [8+8]
8. (a) Discuss the password file protection mechanisms.
(b) Write a detail note on Masquerader, Misfeasor, and clandestine user. [8+8]

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Set No. 3

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1. Modern operating systems are interrupt driven systems. Explain. [16]
2. Draw and explain about Two-State process model. [16]
3. What are the requirements of mutual exclusion? [16]
4. What is a deadlock? What are the necessary conditions for a deadlock occurrence? [16]
5. Give shorts notes on:
 - (a) Dynamic relocation
 - (b) Dynamic Loading
 - (c) Dynamic linking [6+4+6]
6. Explain Fair-share scheduling policy with an appropriate example. Compare its performance with any other scheduling policy. [16]
7. (a) Describe the key features of NTFS.
(b) Discuss file allocation method in UNIX file. [8+8]
8. (a) Explain the protection spectrum offered by operating system.
(b) Make a comparison of Passive threats with active threats. [8+8]

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1. Differentiate Distributed systems from Multiprocessor systems. [16]
2. Draw and explain about process state transition diagram with one suspended state. [16]
3. Define monitor. What are its characteristics? [16]
4. What are the different LINUX spinlocks? Explain. [16]
5. (a) Why is it not possible to enforce memory protection at compile time? Explain
(b) Consider a swapping system in which memory consists of the following hole sizes in memory order: 10K, 4K, 20K, 18K, 7K, 9K, 12K and 15K. Which hole is taken for successive segment request of 12K, 10K, 9K for
 - i. first fit
 - ii. worst fit
 - iii. best fit[7+9]
6. Make a comparison of the following disk scheduling algorithms.
 - (a) Shortest service time first
 - (b) SCAN
 - (c) Last in First Out
 - (d) FSCAN. [16]
7. (a) Consider a hierarchical file system in which free disk space is kept in a free space list.
 - i. Suppose the pointer to free space is lost. Can the system reconstruct the free space list?
 - ii. Suggest a scheme to ensure that the pointer is never lost as a result of a single memory failure.(b) Why are physically contiguous files faster to read?
(c) What is a FAT file System? [6+5+5]
8. (a) Explain digital immune system.
(b) Give categorization of viruses. [10+6]
