

Code No: 37121

Set No. 1

**IV B.Tech I Semester Supplementary Examinations, May/Jun 2009
OPERATING SYSTEMS**

**(Common to Electronics & Communication Engineering, Bio-Medical
Engineering and Electronics & Telematics)**

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. Explain about nested interrupt processing with diagram. [16]
2. Explain various operations on processes. [16]
3. What is critical section problem? Explain with example. [16]
4. Elaborate the following Solaris Thread Synchronization Primitives.
 - (a) Readers/Writer Lock
 - (b) Condition Variables. [8+8]
5.
 - (a) What are the benefits of compaction?
 - (b) Compare page table in registers with page tables in memory.
 - (c) What is the difference between a page and a frame? [5+6+5]
6. Discuss about traditional UNIX process scheduling. Illustrate with an example. [16]
7. Explain various file organization and access techniques. [16]
8.
 - (a) Explain in detail active threats.
 - (b) Discuss about Protection of memory. [8+8]

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1. Justify the following statements.
 - (a) OS can be viewed as a Resource Allocator.
 - (b) OS is a Control Program [8+8]
2. (a) What is an instruction trace?
 - (b) What are the common events that lead to the creation of a process? [8+8]
3. Explain how hardware can be used effectively in solving the critical section problem. [16]
4. What is deadlock? How is it prevented? [16]
5. (a) Discuss LRU-Approximation page Replacement.
 - (b) Consider LRU, FIFO, Optimal page replacement algorithms.
Rank these algorithms from bad to perfect according to their page fault rate.
Separate those algorithms which suffer from Belady's anomaly from those
which do not. [8+8]
6. Explain the operating system design issues for I/O management. [16]
7. Explain various file organization and access techniques. [16]
8. Explain intrusion detection. Discuss the approaches to intrusion detection and explain the significance of audit records. [16]

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Set No. 3

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1. What are the various classes of interrupts? Explain. [16]
2. Draw and explain about process state transition diagram with one suspended state. [16]
3. Explain how hardware can be used effectively in solving the critical section problem. [16]
4. What is Dining Philosophers problem? Explain. [16]
5. (a) What is virtual memory? Explain.
(b) Discuss the function of lazy swapper.
(c) Explain the hardware to support demand paging. [5+4+7]
6. Give and explain logical structure of the I/O facility, Buffer Cache organisation, Device I/O in UNIX SVR4, I/O. [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. What is a trusted system? Explain how Trojan horse defense is done by the secure, trusted operating system. [16]

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**Answer any FIVE Questions
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1. What are the three different techniques for the I/O communication? Explain in detail. [16]
2. What is a process? What are the various states in which a process can be? Explain. [16]
3. Differentiate Binary semaphore primitives with counting semaphore primitives. [16]
4. Describe a system model for study of deadlock situation. [16]
5. Explain about address binding for a user program and discuss multi step processing of a user program. [16]
6. Consider the following set processes:

Process Name	Arrival Time	Processing Time
A	0	3
B	1	5
C	3	2
D	9	5
E	12	5

Develop a Gantt-chart to show the execution pattern using following policies:

- (a) FCFS
- (b) SPN
- (c) SRT
- (d) HRRN
- (e) RR(q=1)
- (f) RR(q=4)
- (g) Feedback(q=1)
- (h) Feedback(q=2ⁱ) [8×2]

7. (a) Bitmaps are not often used for main memory allocation. They are commonly used for disk space allocation. Explain on why this is so.

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- (b) Give an example of an application that could benefit from operating system support for random access to indexed files. [8+8]
8. (a) Discuss the three options available in Windows 2000 for requesting access.
(b) Describe the generic access of Windows 2000.
(c) How is the AES expected to be an improvement over triple DES? [6+5+5]

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