

Code No: 07A70408

**R07****Set No. 2**

IV B.Tech I Semester Examinations, December 2011

**OPERATING SYSTEMS**Common to Bio-Medical Engineering, Electronics And Telematics,  
Electronics And Communication Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. Give short note on the following :
  - (a) Binary Semaphores.
  - (b) Bounded Wait. [8+8]
2. Define the essential properties of the following types of operating systems:
  - (a) Batch
  - (b) Interactive
  - (c) Network
  - (d) Parallel [4×4]
3. (a) When do page faults occur? Describe the action taken by the operating system when a page fault occurs?  
(b) Explain optimal page replacement algorithm.  
(c) Write a note on thrashing. [5+6+5]
4. Draw and explain about process state transition diagram with one suspended state. [16]
5. Make a comparison of all the file organization techniques. Discuss relative performance aspects of these organization. [16]
6. Discuss about traditional UNIX process scheduling. Illustrate with an example. [16]
7. (a) List the fields of audit records. Explain each.  
(b) Write notes on confidentiality, authentication. [8+8]
8. Explain the solution to Dining Philosophers Problem using Monitors. [16]

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1. Draw and explain program flow of control without and with interrupts. [16]
2. Write programs for hardware support for mutual exclusion using
  - (a) Test and set instruction.
  - (b) Exchange instruction. [8+8]
3. (a) Explain various disk performance parameters.  
(b) Show that the use of buffer can reduce the running time by atmost a factor of two. [8+8]
4. Explain the solution to Dining Philosophers Problem using Semaphores. [16]
5. (a) Compare global and local page replacement algorithms. What are the advantages of each?  
(b) Describe two-level paging. What problems two-level paging tries to solve? [8+8]
6. (a) List and explain three blocking methods.  
(b) What is the relationship between a pathname and a working directory?  
(c) What criteria are important in choosing a file organization? [6+5+5]
7. Draw and explain the Thread structure for Adobe PageMaker. [16]
8. (a) Explain Windows 2000 security structures.  
(b) Discuss the purpose of salt in UNIX password scheme. [10+6]

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**R07****Set No. 1**

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1. Write the resource allocation algorithm for Deadlock detection? Explain with an example. [16]
2. What are the elements of process image? Explain them in detail. [16]
3. Specify the purpose of the following registers:
  - (a) base register
  - (b) limit register
  - (c) memory address register
  - (d) relocation register
  - (e) memory buffer register
  - (f) page-table base register
  - (g) page-table length register
  - (h) fence register. [8×2]
4. (a) List and explain three techniques for performing I/O.  
(b) Discuss the categorization of external devices that are engaged in I/O with computer system. [8+8]
5. Explain how mutual exclusion is achieved by machine-instructions? What are the advantages and disadvantages of using Machine-Instructions to enforce mutual exclusion? [16]
6. What are the drawbacks of Interrupt driven I/O and Programmed I/O? How they are overcome? [16]
7. (a) Explain the protection spectrum offered by operating system.  
(b) Make a comparison of Passive threats with active threats. [8+8]
8. (a) Give a detailed note on NTFS volume layout.  
(b) Explain recoverability of NTFS. [8+8]

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1. Explain the security threats to various computer system assets. [16]
2. (a) Why is the average search time to find a record in a file less for an indexed sequential file than for a sequential file? Explain.  
(b) What is the difference between a file and a database?  
(c) What are typical operations that may be performed on a directory? [6+4+6]
3. What is the difference between preemptive and non preemptive scheduling? Explain an algorithm for each scheduling type. [16]
4. Explain about various mechanisms for interrupting the execution of a process. [16]
5. (a) Explain first-fit, best-fit, worst-fit allocation algorithms.  
(b) Consider a logical address space of 8 pages of 1024 words mapped on to a physical memory of 32 frames.
  - i. How many bits are there in the logical address?
  - ii. How many bits are there in the physical address? [10+6]
6. Explain about various LINUX Memory Barrier Operations. [16]
7. What is the purpose of the command interpreter? Why is it usually separate from the kernel? [16]
8. Explain how the Processes accessing shared data is protected by a semaphore with a relevant diagram. [16]

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