

**III B.Tech. II Semester Regular Examinations, April/May -2005**

**OPERATING SYSTEMS**

**(Electronics & Instrumentation Engineering)**

**Time: 3 hours**

**Max Marks: 80**

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

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1. What is locality of reference? Explain the principles for the same. Also describe the method of Stack implementation.
2. Discuss the attributes of the process. Describe the typical elements of process control Block.
3. What are the requirements for mutual exclusion? Explain them in detail.
4. What are the principles of deadlock? And explain in detail the two categories of resources.
5.
  - (a) Consider a dynamic partitioning scheme. Prove that on an average the memory contains half as many holes as segments
  - (b) What are the steps involved in loading a program in memory
  - (c) Compare and Contrast the different approaches to loading
6.
  - (a) Explain in detail about disk cache performance using frequency based replacement.
  - (b) The following equation was suggested both for cache memory and disk cache memory
$$T_s = T_c + M * T_D$$
Generalize this equation to a memory hierarchy with N levels instead of just two levels
7.
  - (a) What are preallocation, dynamic allocation, portion size w.r.t secondary storage management?
  - (b) Describe various file allocation methods.
8.
  - (a) How resources of a computer system protected?
  - (b) Explain user-oriented access control.
  - (c) Explain data-oriented access control.

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1. (a) Explain the Operating system as Resource Manager.  
(b) A major operating system will evolve over time for a number of reasons. What are they?
2. Discuss the attributes of the process. Describe the typical elements of process control Block.
3. (a) Explain busy waiting and blocking wait.  
(b) Is busy waiting always less efficient (in terms of using process or time) than a blocking wait? Explain
4. Give the conditions for deadlock and explain the methods of preventing deadlock.
5. (a) Explain the operation of paging and translation look-aside buffer using a neat sketch  
(b) Explain the address translation in a paging system using a neat sketch.  
(c) Explain using illustrations typical memory management formats
6. (a) What are preemptive and non-preemptive scheduling?  
(b) Discuss about preemptive scheduling policies.
7. (a) Explain file system software architecture.  
(b) What are the important criteria in choosing a file organization  
(c) Explain the file and sequential file organization.
8. Write short notes on
  - (a) Viruses
  - (b) Worms
  - (c) Logic bomb
  - (d) Trap door

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1. With the help of neat block diagram, describe the computer components with an example
2. (a) Explain the reasons for process terminations.  
(b) Describe the single blocked queue and multiple blocked queues with an example.
3. What are the principles of concurrency and explain the execution of the concurrent process with a simple example.
4. What are the principles of deadlock? And explain in detail the two categories of resources.
5. Write short notes on the following:
  - (a) Page Table structure
  - (b) Translation look-aside buffer.
  - (c) Segmentation
  - (d) Paging
6. (a) What are the criteria based on which scheduling policies are evaluated.  
(b) Describe round robin and feedback scheduling policies.
7. (a) What are the various types of operations that may be performed on the directory  
(b) What are the various access rights that can be assigned to a particular user for a particular file?  
(c) Explain different methods of record blocking.
8. Write short notes on:
  - (a) Trojan Horse defense
  - (b) Trojan horses

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1. (a) Discuss the Operating system design hierarchy with an example.  
(b) Explain the applications of Windows NT Operating System.
2. (a) Define the following
  - i. Process
  - ii. Program
  - iii. Process control block
  - iv. Process Scheduling(b) Explain the process State Transition diagram with examples.
3. What are the requirements for mutual exclusion? Explain them in detail.
4. (a) What are the conditions that must satisfy for deadlock occurrence and explain them.  
(b) Is the deadlocks problem preventable? Justify your answer with example and diagram.
5. (a) Discuss the process of Linking using illustrations  
(b) Write about Linkage Editor.  
(c) Write the steps involved in Load Time Dynamic Linking  
(d) Write in brief about run time dynamic linking
6. (a) What are the criteria based on which scheduling policies are evaluated.  
(b) Describe round robin and feedback scheduling policies.
7. (a) Explain file system software architecture  
(b) Explain the functions of a file management system with a diagram
8. Write short notes on
  - (a) Viruses
  - (b) Worms
  - (c) Logic bomb
  - (d) Trap door

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