Department of Computer Science & Engineering

QUESTION BANK

Subject: OS **Faculty Name: Vidha Sharma**
Branch: III CSE I Semester

UNIT – I

1. What are the various objectives and functions of Operating Systems? [Nov2007,set-4,][Nov2008, set-1]
2. What are the major activities of an operating system with regard to process management? [Nov2008, set-2]
3. Differentiate Distributed systems from Multiprocessor system [Nov2008,set-4,1]
4. Explain the basic instruction cycle with appropriate diagram [Nov2007,set-2]
5. Explain about the various memories hierarchy. [Nov2007,set-3][Feb-2008,set-2]
6. Explain about interrupts and various types of interrupts [Nov2007,set-1]
7. Explain about protection and security?
8. Explain about multiprogramming and time-sharing operating system?
9. Explain operating system structure?
10. Explain about system calls?
11. (a) Justify the following statements: i. OS can be viewed as a resource allocator ii. OS as a control program.
    (b) What constitutes an operating system? Explain. [4+4+8][Dec 2011 Set 1/2/3/4]
12. State and explain the various types of system calls in detail[8].[December 2011 R09]

UNIT - II

1. What is a process ?explain different process states [Feb-2008,set-1,][Nov -2007,set-3,4]
2. What is Process Control Block? Explain its structure. [Feb-2008, set-3]
3. Explain about single threaded and multi threaded process models with suitable diagrams.[Nov-2007,set-2]
4. Explain about single threaded and multi threaded process models with suitable diagrams. [Nov2007,set-2]
5. Explain about process scheduling? Explain different types of schedulers?
6. Define Thread and explain advantages of threads?
7. Explain about different multithreading models?
8. Explain about preemptive and non-preemptive scheduling?
9. Explain about FCFS,SJF Scheduling algorithms?
10. Explain about Priority, Round-Robin Scheduling algorithms?
11. Explain about multilevel Queue, multilevel feedback (or) feedback scheduling?
12. (a) Explain any four scheduling algorithms with their merits and demerits.
    (b) Explain the various disk scheduling policies. [8+8] [Dec 2011 Set 1/2/3/4]
13. Compare and contrast the FCFS and SJF scheduling algorithms illustrate with Gantt charts whenever necessary. December 2011 R09]
14. Discuss about the following: (a) User-level threads (b) Kernel-level threads (c) Multi-threadings. [5+5+6] [April 2011]

UNIT - III

1. Define monitor. What are its characteristics? [Feb-2008,set-3]
2. What is a semaphore? What are the various operations defined on it?[Nov-2007,set-1]
3. What is the difference between weak semaphore and strong semaphore?

4. Give short note about the following: [Nov-2007,set-2]
   (a) Binary Semaphores. (b) Bounded Waiting.
5. Explain about Critical section?
6. Explain about ACID Properties?
7. Explain messaging in UNIX?
8. Explain about log based recovery?
9. Explain about deadlocks and Starvation?
10. Explain about Classic problems of Synchronization?
11. Describe the semaphore solution for critical region.[16] [Dec 2011 Set 1/2/3/4]
12. How the problem among dining philosophers can be resolved? Suggest a suitable algorithm. [8+8]
13. (a) Explain different conditions of process interaction with respect to the degree of awareness, relationship between processes, influence of processes, control problems.
    (b) What are the necessary requirements for mutual exclusion? [8+8] [April 2011]

UNIT-IV

1. (a) Discuss LRU-Approximation page Replacement.
   (b) Consider LRU, FIFO, Optimal page replacement algorithms.[Feb2008, set-2]
2. What is swapping and what is its purpose? [Feb-2008,set-4]
3. Explain paging scheme for memory management, discuss the paging hardware and Paging model.[Nov-2007, set-1]
4. Explain about contiguous memory allocation?
5. Explain about first fit, best fit, worst fit, next fit algorithms? [Dec 2011 Set 1/2/3/4]
6. Explain about advantages and disadvantages of paging?
7. Explain difference between paging and segmentation?
8. Explain about the following page replacement algorithms a)FIFO b)OPR, c)LRU
9. Explain about Linux memory management?
10. (a) What elements are typically found in a page table entry? Briefly define each element.
    (b) What is the purpose of translation look aside buffer?
    (c) What is the difference between resident set management and page replacement policy? [6+5+5] [April 2011]

UNIT-V

1. Write the resource allocation algorithm for dead lock?[16][Feb2008,set-1]
2. Explain about Deadlock Prevention. [16][Feb2008, set-4]
3. Explain about Deadlock Avoidance.[16][Nov2008,set-4]
4. Explain about necessary conditions of deadlock
5. Explain about resource allocation graph(RAG)?
6. Explain about recovery from deadlock?
7. Explain about Streams in detail?
8. Discuss about I/O devices in I/O hardware?
9. Explain about deadlock prevention using resource preemption?
10. Explain about PC bus Architecture?
    (a) Define a STREAM. Draw and explain the STREAMS Structure along with its benefits.
    (b) Distinguish between a STREAM driver and STREAM module. [12+4] [Dec 2011 Set 1/2/3/4]
11. (a) Discuss about direct memory access.
    (b) With neat diagram explain I/O organization model. [8+8] [April 2011]

UNIT-VI

1. Discuss the criteria for choosing a file organization. [Feb-2008,set-2]
2. Describe indexed file, indexed sequential file organization. [Feb-2008,set-2]
3. Explain hash files organization. [Nov-2007,set-1]
4. Discuss the address information elements of a file directory. [Nov-2007, set-1]
5. Discuss the objectives for file management systems. [Nov-2007, set-4]
6. Explain the file system Architecture. [Nov-2007, set-4]
7. Explain about file attributes, file operations, and file types?
8. Explain about UNIX file management?
9. Explain about single-level, two-level directory structure?

10. Explain about file system mounting, file sharing?
11. Explain different File Access Methods and different File Sharing Modes in file system. [16][Dec 2011 Set 1/2/3/4]
12. (a) What do you understand by a file directory?
    (b) Explain briefly the information elements of a file directory.
    (c) Explain what is tree-structured directory? [5+5+6] [April 2011]

UNIT-VII

1. Suppose the head of a moving- head disk with 200 tracks, numbered 0 to 199, is currently serving a request at track 143 and has just finished a request at track 125. If the queue of requests is kept in FIFO order: 86, 147, 91, 177, 94, 150, 102, 175, 130. What is the total head movement to satisfy these requests for the following Disk scheduling algorithms.
   (a) FCFS (b) Random (c) SCAN (d) SSTF (e) C- SCAN [Nov2007,set-2]
2. Discuss about N- step- SCAN policy for disk scheduling[8][Nov2007,set-4]
3. What is FAT? Discuss its role in secondary storage management.
4. Explain various techniques implemented for free space management, discuss with suitable examples. [Nov2008,set-2]
5. Explain about overview of mass-storage structure?
6. Explain about RAID levels?
7. Explain about Tertiary-storage structure?
8. Explain about disk management?
9. Explain about Look and CLook Algorithm?
10. Explain about swap space management?
11. (a) What is a hard disk? Explain the characteristics of a hard disk.
    (b) What is disk interleaving? Explain briey with an example. [6+10] [Dec 2011 Set 1/2/3/4]

UNIT-VIII

1. Give the classification of intruders. Explain each class.[8][Feb-2008,set-2]
2. a)Explain the flaws in one-way encryption of password strategy. [Feb-2008,set-4]
3. Write a brief note on intrusion detection. .[8][Feb-2008,set-4]
4. Comparison User-Oriented access control with data-oriented access control. [8][Feb-2008,set-2]
5. Explain the flaws in one-way encryption of password strategy. [8][Nov-2007,set-2]
6. Write a brief note on intrusion detection. [8],[Nov-2007, set-2]
7. Explain the various password selection strategies. [8][Nov-2007, set-4]
8. Discuss about UNIX password scheme. [8][Nov-2007, set-4]
9. Explain about protection technique of critical section in LINUX[16],[Nov2007,set-2]
10. Give taxonomy of malicious programs. [8]
11. Explain all the threats in detail. [16]
12. What hardware features are needed in a computer system for efficiency capability manipulation? Can these be used for memory protection? Explain. [16] [Dec 2011 Set 1/2/3/4]
13. What do you understand by trusted systems? Draw a figure of reference monitor concept and explain. [5+5+6] [April 2011]