SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
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QUESTION BANK (DESCRIPTIVE)

Subject with Code :OS -18CS0510   **Course & Branch**: B.Tech – CSE
Year &Sem: II-B.Tech& II-Sem   **Regulation:** R18

UNIT –I

Operating System Overview and System Structures

2Marks

1. What is an Operating system?   [L1]
2. Define Kernel?   [L1]
3. What are Batch systems?   [L1]
4. How Dual- Mode Operation works?   [L1]
5. What is meant by Time-sharing Systems?   [L1]
6. What are the advantages of Multiprogramming?   [L1]
7. What are Multiprocessor Systems & give their advantages?   [L1]
8. List the services provided by an Operating System?   [L1]
9. Define system calls.   [L1]
10. What is Virtual Machine?   [L1]

10 Marks

1. Define Operating System and explain the various types of Operating Systems?   [L1,L2][10M]

2. a) Explain Operating System Structures?   [L2][5M]

   b) Explain System Programs?   [L2][5M]

3. Explain the different functions of an operating system and discuss the various services

   provided by an operating system.   [L6][10M]

4. a) Explain about the dual mode operation in OS with a neat block diagram.   [L5][5M]

   b) What is operating system? Explain multiprogramming and time sharing systems.   [L1][5M]

5.a) Explain briefly concept of virtual machines   [L2][5M]

   b) Write the differences between monolithic kernel and microkernel.   [L5][5M]

6. a)Explain briefly system calls with examples.   [L2][5M]

   b) Explain different operations performed by the operating system.   [L2][10M]

7. Explain Computing Environments?   [L2][10M]
8. a) Explain different types of system calls with suitable example.   [L5][5M]

   b) What are the functionalities of Operating Systems? Explain in detail   [L1][5M]

9. a) Explain difference between Multitasking and Multi Programming?   [L5][5M]

   b) Explain briefly User and Operating System Interface   [L2][5M]

10. Explain briefly different types of System calls?   [L5][10M]

UNIT –II

Process & Threads

2Marks

1. Define process?
2. What is meant by the state of the process?
3. Define schedulers?
4. What requirement is to be satisfied for a solution of a critical section problem?
5. What is the sequence of operation by which a process utilizes a resource?
6. What are the types of scheduler?
7. Define Thread.
8. Define Time slice.
9. What does PCB contain?
10. What are the 3 different types of scheduling queues?

10 Marks

1. a) Define Process? Explain process State diagram?   [L1,5M]

   b) Explain about process schedulers?   [L2,5M]

2. Consider 3 processes P1, P2 and P3, which require 5, 7 and 4 time units   [L5,10M]
   and arrive at time 0, 1 and 3. Draw the Gant chart, process completion
   sequence and average waiting time for.

   (i) Round robin scheduling with CPU quantum of 2 time units.

   (ii) FCFS.

3. Explain CPU Scheduling Algorithms with examples?   [L5,10M]

4. a) Explain about Scheduling Criteria.   [L2,4M]

   b) Evaluate FCFS CPU Scheduling algorithm for given Problem   [L5,6M]

Process	P1	P2	P3	P4
Process Time	24	3	5	6

5. Evaluate SJF CPU Scheduling algorithm for given Problem   [L5,10M]

Process	P1	P2	P3	P4
Process Time	8	4	9	5
Arrival Time	0	1	2	3

6. Evaluate Round CPU Scheduling algorithm for given Problem   [L5,10M]

   Time slice =3 ms.

Process	P1	P2	P3	P4
Process Time	10	5	18	6
Arrival Time	5	3	0	4

7. Explain in detail Inter Process Communication?   [L2,10M]

8. a) With a neat sketch explain process state diagram.   [L5,5M]

   b)Write about Threads?   [L5,5M]

9. a) Write the difference between user level thread and kernel level thread?   [L5,5M]

   b) What is synchronization? What are the different synchronization mechanisms? Explain in detail.
                                                                                     [L2, 5M]
10.   a) What are the criteria for evaluating the CPU scheduling algorithm?   [L1,5M]

   b) What is a process? Explain Process Control Block.   [L1,L2,5M]

UNIT –III

Process Synchronization & Deadlocks

2Marks
1. Define deadlock?
2. Give the condition necessary for a deadlock situation to arise?
3. Define race condition
4. What are the requirements that a solution to the critical section problem must satisfy?
5. Define Starvation in deadlock?
6. Define semaphores.
7. Name dome classic problem of synchronization?
8. Define 'Safe State"?
9. What is critical section problem?
10. Define busy waiting and spinlock

10 Marks

1. What is critical section problem? Explain with example?   [L1,L2][10M]

2. What is Semaphore? Explain producer consumer problem using semaphore?   [L1,L5][10M]

3. Define process synchronization and explain Peterson solution algorithms?   [L1,L2][10M]

4. What is Monitor? Explain with any example using monitor?   [L1,L2][10M]

5. Explain the solution for Dining-Philosophers Problem   [L5][10M]

6. a) What are the methods for handling deadlock.   [L4][6M]

   b) Write about deadlock and starvation?   [L5][4M]

7. a) Explain about Deadlock Avoidance?   [L5][5M]

   b) Explain how recovery from deadlock?   [L2][5M]

8. Explain Dead lock detection (Banker's Algorithm) with Example?   [L5][10M]

9. Write about Deadlock Prevention Methods?   [L5][10M]

10. Discuss about the following   [L6]

   A) Semaphore   5M

   B) Monitor   5M

UNIT –IV

Memory Management & Disk Scheduling

2Marks
1. What is meant by Demand Paging?
2. Define Locality of reference?
3. Explain Page Fault?
4. What is Thrashing?
5. Define Page Table?
6. What is meant by Memory Compaction?
7. What are Swapping?
8. Mention few Page Replacement Strategies.
9. What is meant by Global Replacement and Local Replacement?
10. Define Partition Control Block?

10 Marks

1. Discuss about page replacement algorithms with example [L6][10M]

2. a)Consider the following reference string [L5][6M]

   7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. Assume there are three frames. Apply LRU replacement algorithm to the reference sting above and find out how many page faults are produced. Illustrate the LRU page replacement algorithm in detail and also two feasible implementation of the LRU algorithm. [L2][4M]

   b) Explain about Swapping.

3. a) What is Segmentation ? Explain with Example. [L1][5M]

   b) Explain about Paging.? [L2][5M]

4. Explain the following disk scheduling algorithm with proper diagram [L5][10M]
   a) FCFS
   b) SSTF
   c) SCAN
   d) LOOK
   e) C-SCAN.

5. a)Discuss the procedure for page fault in demand paging. [L6][4M]

   b) Suppose that a disk drive has 5000 cylinders numbered 0 to 4999. The drive is currently serving a request at cylinder 143. The queue of pending requests in FIFO order 86,1470,913,1774,948,1509, 1022, 1750, 130 starting from current head position. What is the total distance that disk arm moves to satisfy all the pending request for FCFS and SSTF disk scheduling algorithm. [L4][6M]

6. Write short notes on [L5]

   a) Demand paging 3M

   b) Thrashing 3M

   c) Page replacement 4M

7. Given page reference string: 1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3. Compare the number of page faults for LRU, FIFO and Optimal page replacement algorithm.   [L5][10M]

8. a) What is virtual memory? Discuss the benefits of virtual memory techniques.   [L1,L5][6M]

   b) Write a short notes on Disk management.   [L5][4M]

9. Explain the different Disk scheduling algorithms with their comparisons.   [L2][10M]

10. Explain the following: [L2][5M]
     a) i) Paging
        ii) Segmentation
     b) What is contiguous memory allocation? Explain it.   [L1,L2][5M]

UNIT –V

File Management

2Marks

1. What are the various operations performed in a File?
2. What are the operations performed in a Directory?
3. What are the different directory structures available?
4. What are the different methods for allocation in a File System?
5. What is meant by Free Space List?
6. What are File Attributes?
7. What are the Access methods available?
8. What is meant by Executable file?
9. What is meant by File Pointer?
10. Define UFD And MFD.

10 Marks

1. a) Explain the concept of file with Example.   [L2][5M]

    b) Explain about access method with Example.   [L2][5M]

2. a) Discuss about File type.   [L6][5M]

   b) Explain about File operation.   [L5][5M]

3. a) Define UFD and MFD.   [L1][5M]

    b) Explain about different directory structure available.   [L2][5M]

4. Write about different types of operation performed on file.   [L5][10M]

5. Write short notes on

    a)Directory Implementation   [L5][5M]

    b)File system Structure.   [L5][5M]

6. Explain about bit vector and Linked list free space management Technique [L2][10M]

7. a) Explain about Grouping Free space management Technique.   [L2][5M]

   b) Explain how directory can be Implemented using linear list. [L5][5M]

8. a) What is free space management technique?   [L1][5M]

    b) Explain the implementation of directory using Hash table.. [L2][5M]

9. a) Explain the concept of the file.   [L2][5M]

   b) Write short notes File types   [L5][5M]

10.Explain file allocation methods in detail.   [L2][10M]