GOVT. DEGREE COLLEGE

NANDIKOTKUR- AP

QUESTION BANK

III SEMESTER

B.Sc HONOURS (Computer Science)

Operating Systems

Smt.T.Jhansi Rani

Lecturer in Computer Science

UNIT 1: INTORDUCTION TO OS

Essay Answers Questions

1. Define Operating System And List The Basic Services Provided By Operating system.
2. Differentiate among the following types of OS by defining their essential properties.

a) Time sharing system

b) Parallel system

c) Distributed system

d) Real time system

3. Explain the essential properties of

a) Batch System

b) Time sharing

c) Real time

d) Parallel

e) Distributed

f) Handheld

g) Embedded

h) Smart Card O.S

4. Differentiate among the following types of OS by defining their essential properties:

a) Time Sharing System

b) Parallel System

c) Simple batch System

d) Real time System

5. Explain batch system and Multiprogrammed System in detail.
6. Explain the terms :

a) Real time System

b) Distributed System

7. Explain the terms :

a) Parallel System

b) Batch System

8. Explain O.S as extended machine in detail.
9. Explain OS as resources manager

Short Answer Questions

1)What is the key difference between a trap and an interrupt?

2)What are the types of System calls?

3)List any four process management system call.

4)Define user mode and kernel mode. Why two modes are required?

5)What is the O.S features required for multiprogramming

6)What are the advantage and disadvantage of multiprocessor system?

7)Describe the difference between symmetric and asymmetric multiprocessing?

8)Distinguish between the client-server and peer-to-peer models of distributed system

9)What difference is between loosely coupled and tightly coupled system.

10) What are advantages of distributed System?

UNIT 2: PROCESS MANAGEMENT

Essay Answers Questions

1) Define process and Explain process states in details with diagram
2) Explain process states and process control block in details
3) Explain the process state transition diagram used in multiprogramming environment.Describe the fields in a process control block (PCB).What is switching overhead?
4) What is thread? Explain classical thread model
   OR Explain threads in detail
5) Explain and differentiate between user level and kernel level thread.
6) List the main difference and similarities between threads and process.
7) What are various criteria for a good process scheduling algorithm? Explain any twopreemptive scheduling algorithms in brief.
8) Explain the following process scheduling algorithm
   a) Priority scheduling
   b) Shortest job first scheduling
9) Explain the effect of increasing the time quantum to an arbitrary large Number and decreasing the time quantum to an arbitrary small number for round robin schedulingalgorithm with suitable example?

10) Consider following processes with length of CPU burst time in milliseconds

Process	Burst time
P1	5
P2	10
P3	2
P4	1

All process arrived in order p1, p2, p3, p4 all time zero

a) Draw Gantt charts illustrating execution of these processes for SJF and round robin(quantum=1)
b) Calculate waiting time for each process for each scheduling algorithm
c) Calculate average waiting time for each scheduling algorithm

Short Answer Questions

1. What is semaphore? Discuss product-consumer problem with semaphore.
2. Write short note on: a) Dining philosopher problem b) System calls c) Monitors
   a. Peterson's solution for achieving mutual exclusion e) Semaphores
3. f) Readers & writers problem.
4. Explain the terms: a) time sharing b) mutual exclusion
5. What is monitor? Explain solution for producer-consumer problem using monitor. Explainmonitors in detail.
6. Write short on: a) message passing b) shell
7. How message passing is used in IPC.
8. What is message passing? Discuss procedure consumer problem with message passing.
9. Explain use of message passing & semaphore for inter process communication?
10. Explain dinning philosopher problem & its solution.
11. What is dinning philosopher problem? Explain its solution with monitor.

UNIT 03: FILE MANAGEMENT

Essay Answers Questions

1. What are the objectives and minimal set of requirement for the file management system?
2. What criteria are important in choosing a file organization?
3. Explain briefly file system architecture & file management function.
4. List& briefly explain 5 file organization.
5. Compare file organization methods
6. Which are the typical information elements of a file directory?
7. Which are the typical operations performed on directory?
8. What are the typical access rights that may be granted or denied to a particular user for aparticular file?
9. What are methods of free space management of Disk?
10. Explain linked list allocation using index in details.
11. Explain file system consistency in detail.
12. Explain file system reliability & performance in detail.
13. What is directory? Explain directory operation in details.

Short Answer Questions

1. Explain the following file allocation methods
2. Contiguous allocation b) i-node
3. What are points to be consider in file system design? Explain linked list allocation & indexallocation in detail.
4. Differentiate between windows and unix file system.
5. What is the difference between field and record?
6. What is the difference between file and database?
7. What is file management system?
8. What is relation between pathname & a working directory?

UNIT 4: MEMORY MANAGEMENT

Essay Answers Questions

1. What are the memory management requirements?
2. Explain multiprogramming with fixed partition.
3. Explain multiprogramming with dynamic partition.
4. Write short note on: Relocation problem for multiprogramming with fixed partitions.
5. Explain static partitioned allocation with partition sizes 300,150, 100, 200, 20. Assuming first fit method indicate the memory status after memory request for sizes 80, 180, 280, 380, 30.
6. Discuss in details memory management with buddy system.
7. A 1MB block of memory is allocated using the buddy system.
8. Show the results of the following sequence in a figure: Request 70; Request 35; Request80; Return A; Request 60; Return B; Return D; Return C.
9. Show the binary tree representation following Return B.
10. Explain memory management with bit maps in detail.

Short Answer Questions

1. Write short note on:
    i. Segmentation
    ii. Page table
    iii. Compaction
    iv. Working set model
    v. fragmentation
2. Write short note on:
    i. Not-recently used page replacement algorithm.
    ii.Optimal page replacement algorithm.
    iii. Swapping.
    iv.Relocation and protection.
3. Explain following page replacement algorithm in detail.
    i. i. LRU ii. FIFO
4. Explain the following page replacement algorithm.
    a. Optimal page replacement
5. Least recently used page replacement

UNIT 5: DEVICE MANAGEMENT

Essay Answers Questions

a. Discuss briefly the following issues related to device independent i/o software.
   i. Uniform interfacing for device drivers.
   ii. Buffering.

2. Discuss in details devices drivers.
3. Discuss the following:
4. Magnetic disk
   i. CDs
   ii. RAID
   iii. DVDs
   iv. Formatting Disk

5. Discuss the following related to disk space management
   i. Block size
   ii. Keeping track of free blocks.

6. Suppose a disk drive has 400 cylinders , numbered 0 to 399.The driver is currently serving arequest at cylinder 143 and previous request was at cylinder 125 .The queue of pending request in FIFO order is: 86,147,312,91,177,48,309,222,175,130.
7. Starting from the current head position what is the total distance in cylinders that the disk to satisfy all the pending request for each of the following disk scheduling algorithms?
   i. 1] SSTS 2] SCAN 3] C-SCAN

Short Answer Questions

Write short notes on:

ii. Devices independent I/O software
iii. Goals of I/O software
iv. Interrupt handler
v. I/O Devices.
vi. Device drivers
vii. Device controllers
viii. Disk space management
ix. Disk arm scheduling algorithm