Chapter-1: Introduction. -~8 marks

- OS definition
- Various types of OS.
- Structure of OS with advantages & disadvantages
- Operations of OS
- View [User / System]
- System calls, Working of a system call
- Shell & Kernel
- OS provides abstraction.
- Components of OS
- Virtual machine structure.
- [redacted]

hapter2 Process management. - 8 marks

- Process
- Process model - Two state, Five state.
- Process v/s thread
- Preemptive v/s Non-preemptive
- User-level thread v/s Kernel level thread.
- Process scheduling
- Scheduler, Types, Dispatcher.
- Context switching.
- Process Control Block
- Scheduling Numericals
  - → FCFS (Non-preemptive)
  - → SJN (~~Pre~~ Non-preemptive)
  - → SRTN (Preemptive) or Preemptive SJN
  - → HRRN
  - → Round Robin
  - → Priority (Preemptive)

Chapter-3 Process Synchronization - 10 marks

- Critical section problem
- Race condition
- Mutual Exclusion (Requirement
- Disabling Interrupt
- Lock Variables
- Strict Alternation
- Peterson's Solution
- TSL Instruction
  - Sleep, WakeUp
- Semaphores
  - Consumer Producer + Soln
  - Dining Philosopher + Soln
  - Reader Writer Problem + Soln
- Mutex
- Inter Process Communication.

Chapter-4 Memory management.

- Memory management
- Differences: Fixed v/s Variable Partitioning
  Compaction v/s Coalescing
- Logical address mapping to physical address + Example.
- Role of TLB (Translation lookaside Buffer)
- Page Replacement Algorithm
  - LRU
  - FIFO
  - OPT
  - LFU [2074 Bhadra only]
- Numericals of ~~on~~ logical address.
- Definition: - Page fault

- Demand paging
- Thrashing (Short notes)
- Residence monitor.

Chapter 5 - File Systems - 10 marks

- What is file?
- File Attributes
- File Operation
- File Access methods
- Level of directories
- File System layout - Imp
- Free Space management with example.
- Implementing File
- Inode with advantages & disadvantage
- File Allocation with Adv. & Disadv.
- UNIX File System
- File System Performance Indicator
- File System Interface.

apter 6 : I/O Management & Disc Scheduling -10 marks

VImp Disc Scheduling Numerical (FCFS, SSTF, SCAN, LOOK, CSCAN, CLOOK)

Imp I/O Software with diagram.

- Programmed I/O, Interrupt I/O
- DMA
- Disc Scheduling
- Device Independent I/O Software. + Functions.
- Principles of I/O Software.

Chapter-7 Deadlock. - 10 marks.

- What is deadlock.
- VImp Deadlock Conditions - VImp, Why all conditions are necessary?
- VImp Deadlock Handling :- Prevention
  Avoidance
  Detection
  Recovery
- VImp Banker's Algorithm Numerical (Multiple Resource)
- [redacted] Deadlock v/s Indefinite postponement

Chapter - 8 : Security :

- Attack
- Imp Types of attack.
- Protection Mechanism : Protection Domain, C-List. ACL - Imp
- Advantages of ACL over protection domain
- Cryptography
- Encryption, Decryption + Block diagram.
- Secret Key, Public & Private Key
- Assymetric & Symmetric cryptography
- Ceaser Cipher
- Monoalphabetic Substitution
- Transposition Cipher.
- Digital Signature.
- Public Key cryptography
- Authentication.

Chapter -9 : System Administration. -4 to 8 marks

- Roles of System Administrator / Administration Task / Duties and Responsibilites of System Admin
- System Admin.
- Shell Scripts
- Special User v/s General User.