

VALLIAMMAI ENGINEERING COLLEGE
DEPARTMENT OF INFORMATION TECHNOLOGY
CS2411-OPERATING SYSTEM QUESTION BANK

UNIT-I (PROCESSES AND THREADS)

PART-A

1. What is an Operating system? What are the various OS Components?
2. What is spooling?
3. What is the Kernel?
4. What are Batch systems?
5. What is the advantage of Multiprogramming?
6. What do you mean by Time-sharing systems?
7. Define RTOS.
8. Differentiate User thread and Kernel thread.
9. What are multiprocessor systems & give their advantages?
10. What are the different types of multiprocessing?
11. What is a process state and mention the various states of a process?
12. What is process control block?
13. What are the use of job queues, ready queues & device queues?
14. What is meant by context switch?
15. Define swapping?
16. Diff.b/w process and Thread.
17. Diff. b/w Long Term Short Term Medium Scheduler.
18. What are the benefits of multithreaded programming?
19. What is the use of fork and exec system calls?
20. What are co-operating process? Give example.

PART-B

1. Explain the various types of computer systems.
2. Give an overview about threads. Explain in detail about the threading issues.
3. Explain in detail about various operating system services
4. Explain process control block
5. What is the need for system calls? Briefly explain the types of system calls provided by an operating system.
6. Explain the functions of various system components of OS
7. What are the advantages of threads? Describe the multithreading Models?
8. Explain in detail about inter process communication
9. What is meant by a process? Explain states of process with neat sketch and discuss the process state transition with a neat diagram.
10. Explain Client-Server communication with an example.

UNIT II (PROCESS SCHEDULING AND SYNCHRONIZATION)

PART – A

1. Define CPU scheduling.
2. What is a Dispatcher? What is dispatch latency?
3. Which are the criteria used for CPU scheduling?
4. Write the 3 ways to deal the deadlock problem?
5. What is a resource-allocation graph?
6. Distinguish between Preemptive and Non-preemptive scheduling.
7. Define throughput?
8. What is turnaround time?
9. Define race condition.
10. Define entry section and exit section.
11. What is a semaphore?
12. Define busy waiting and spin lock.
13. Define deadlock.
14. What is the sequence in which resources may be utilized?
15. What are conditions under which a deadlock situation may arise?
16. Define request edge and assignment edge.
17. Define deadlock prevention.
18. Define deadlock avoidance.
19. What are a safe state and an unsafe state?
20. Define the term critical section.

PART B

1. Write about the various CPU scheduling algorithms.
2. Explain in detail about banker's algorithm with example.
3. How can deadlock be detected and recover? Explain
4. Explain about the methods used to prevent deadlocks
5. Explain the classic problems of synchronization.
6. Explain deadlock and its characterization? What are the necessary conditions for a deadlock.
7. What is Synchronization? Explain how semaphore can be used to deal with n-process CSP.
8. Explain: i) Multilevel Q scheduling ii) Multilevel feedback scheduling iii) Algorithm Evaluation. iv) Real time scheduling.
9. What is critical section problem and explain two process solutions and multiple process solutions?
10. Consider the following set of processes, with the length of the CPU-burst time in given ms

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

- a. Draw four Gants charts illustrating the execution of these process using FCFS, SJF, a non preemptive priority (a smaller priority number implies a higher priority) , and RR (quantum=1) scheduling.
- b. What is the turn around time of each process for each of the scheduling algorithms in part a?
- c. What is the waiting time of each process for each of the scheduling algorithms in part a?
- d. Which of the schedules in part a result in the minimal average waiting time (over all process)?

UNIT III (STORAGE MANAGEMENT)

PART – A

1. Define logical address and physical address.
2. What is logical address space and physical address space?
3. What is the main function of the memory-management unit?
4. Define dynamic loading.
5. Define dynamic linking.
6. What are overlays?
7. Define swapping.
8. What do you mean by best fit and first fit?
9. What is virtual memory?
10. What is Demand paging? What are the major problems to implement demand paging?
11. Define lazy swapper.
12. What is a pure demand paging?
13. Define effective access time.
14. What is Thrashing
15. What is Memory Compaction?
16. Define fragmentation? And its types?
17. Define Belady's anomaly problem?
18. Mention the various page fault handling steps
19. What is the basic approach of page replacement? What are the various page replacement algorithms used for page replacement?
20. What is a reference string?

PART-B

1. Explain about contiguous memory allocation.
2. Give the basic concepts about paging.
3. Explain the following page Table structure:
 - (i) Hierarchical page Table
 - (ii) Hashed Page table
 - (iii) Inverted page Table
4. Explain the basic concepts of segmentation.
5. What is demand paging and what is its use?
6. Explain the various page replacement strategies.
7. What is thrashing and explain the methods to avoid thrashing?
8. What is meant by virtual memory? Give some major benefits which are making applicable.
9. With the suitable examples discuss first fit, Best fit, Worst fit strategies for memory allocation.
10. Consider the following page reference string.
1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6. How many page fault would occur for the following page replacements algorithms, assuming an allocation of 4 frames? Remember that frames are initially empty.
 - (i) LRU
 - (ii) FIFO
 - (iii) Optimal

UNIT IV (FILE SYSTEMS)

PART – A

1. What is a file?
2. List the various file attributes.
3. What are the various file operations?
4. What are the information associated with an open file?
5. What are the different accessing methods of a file?
6. What are the operations that can be performed on a directory?
7. What are the most common schemes for defining the logical structure of a directory?
8. What are the various layers of a file system?
9. What are the structures used in file-system implementation?
10. What are the functions of virtual file system (VFS)?
11. Define seek time and latency time.
12. What are the allocation methods of a disk space?
13. Write the advantages and disadvantages of contiguous allocation?
14. What are the advantages of linked allocation?
15. Why is the production needed in file sharing system?
16. List the features of Linux system
17. Briefly discuss the relative advantages and disadvantages of sector sparing and sector slipping
18. What is meant by OS platform independent?
19. Write about windows2000 file protection and security services.
20. Define LDAP

PART-B

1. What are files and explain the access methods for files?
2. Write in detail about file concept.
3. Explain the schemes for defining the logical structure of a directory.
4. Write notes about the protection strategies provided for files.
5. What are the file allocation methods and explain it.
6. Explain about the free space management.
7. Write in detail about file system implementation.

UNIT – V (I/O SYSTEMS)

PART – A

1. Define buffering.
2. Define caching.
3. Define spooling.
4. What are the various disk-scheduling algorithms?
5. What is low-level formatting?
6. What is the use of boot block?
7. What is sector sparing?
8. Define rotational latency and disk bandwidth.
9. What is meant by streams?
10. What is meant by FCFS?
11. Define SSTF.
12. Define SCAN and C-SCAN scheduling algorithms.
13. What is look scheduling?
14. Define RAID.
15. Difference between stable storage and tertiary storage.
16. What is the role of DMA in I/O systems?
17. How the free space is managed using bit vector implementation.
18. Mention the essential goal of disk scheduling.
19. Define the concept of daisy chain.
20. Define the role of interrupt handler in I/O hardware.

PART-B

1. Write about the kernel I/O subsystem.
2. Explain the various disk scheduling techniques with an example.
3. Write notes about disk management and swap-space management.
4. What is mean by RAID and explain it in detail
5. Discuss about stable and tertiary storages.
6. Explain in detail the salient features of Linux I/O.
7. Explain about the free space management.