OS -Imp Questions

Unit-1

1. What is operating system? Explain the Functions of operating system.
2. What are the services of Operating System? Explain.
3. Define System Calls? Explain types of System Calls.
4. Explain Operating System structure. (Simple and Layered structure)
5. Define Operating system? Explain abstract view of the components of a computer system.
6. (a)Describe Process Management.

   (b) Brief about storage management
7. Discuss Types of operating system with examples
8. (a)What are Advantages and disadvantages of operating system

   (b)What is Open source operating system. Discuss the advantages and several disadvantages of open-source Operating systems.
9. Define (a)Booting (b). System call (c).Kernel (d).System program
10. Explain different computing environments.
11. Explain the Dual-Mode operation of an operating system.

Unit-2

1. (a)Define Process?
   (b)Explain operations on Processes.
2. Explain the states of process clearly with process state diagram.
3. Explain the significance of Process Control Block and describe its typical elements.
4. Discuss about context switch?
5. What is scheduler? Explain various types of schedulers and their roles.
6. What is the need of Inter Process Communication mechanism? Explain the methods of IPC in detail.
7. What are the different CPU process scheduling algorithms. Explain with examples.
   FCFS, SJF, PRIORITY , Round Robin ALgorithms
   (OR)
   Consider the following set of process with the length of CPU burst time given in milliseconds:

PROCESS	ARRIVAL TIME	BURST TIME	PRIORITY
P1	2	2	3

P2	3	3	2
P3	0	1	4
P4	4	2	1
P5	3	2	3

Draw the four Gantt charts illustrating the execution of these processes using FCFS, SJF, Preemptive priority scheduling and calculate waiting and turnaround time of each process for each scheduling algorithm.

8. Define Thread? Difference between user-level and kernel-level thread?
9. What is multithreading ? Explain types of Multithreading models.
10. Explain modes of operating system.
11. What is thread write types of thread libraries and discuss thread isssues.
12. Define Cooperating process? What is the environment need in Cooperating processes?
13. Explain Scheduling Criteria and important terms related to scheduling.

Unit-3

1. Explain Critical section problem discuss the solutions for critical section with an example.
2. Write about process types and modes of process Execution? Explain the conditions to make process synchronize?...
3. What is race condition. Discuss how to solve race condition problems with an example.
4. Write Peterson's algorithm for mutual exclusion. Show how it satisfies mutual exclusion, progress, bounded waiting.
5. What is Semaphore and Explain types of Semaphore . Discuss operations of semaphore?
6. Discuss about Hardware Synchronization
7. (a)What is monitors. Explain what is need of monitors why we prefer monitors
   (b) Explain in detail how semaphores and monitors are used to solve producer consumer problem.
8. Explain Producers and consumers problem? Explain the solutions
9. Explain classical synchronization problems. a) Bounded Buffer , b) Readers- writers problem c). Dining philosopher d) producer consumer problem
10. Explain Mutex locks.

11. What is Deadlock? Explain conditions or characterization needed for deadlock?
12. Explain strategies or methods to handle deadlocks?
13. Explain briefly deadlock detection and recovery?
14. (a)Explain briefly deadlock prevention?
    (b) Explain the safe and unsafe states in deadlocks.
15. What is resource allocation graph. Explain about resource allocation graphs for deadlock with examples . How to use resource allocation graphs for deadlock detection.

16. Explain briefly deadlock avoidance algorithm with an example using safe and unsafe sequence? (Bankers algorithm)

(or)

Consider system with five processor P0 to P4 and 3 resources A, B and C, Resources type A has 10 instances, B has 5 instances and C has 7 instances. The snapshot at time T0 is

	ALLOTED			MAX		
	A	B	C	A	B	C
P0	0	1	0	7	5	3
P1	2	0	0	3	2	2
P2	3	0	2	9	0	2
P3	2	1	1	2	2	2
P4	0	0	2	4	3	3

Now the process P1 request one additional resource type A and two instances of C. Determine whether this new site is safe or not.

Unit- 4

1. What is memory management concept and explain types of memory allocation methods.
2. Explain Contiguous Memory Allocation.
3. What is virtual memory concept explain it briefly.
4. What is paging explain it. Explain structure of page table.
5. Explain demand paging explain with an example
6. What is segmentation explain its advantages.
7. What is fragmentation and explain types of fragmentation.
8. a. Explain swapping briefly.
   b. Explain thrashing briefly.
   c. Describe copy on write
9. What is page fault explain how to handle page fault with an example.
10. Explain page replacement with examples of
    1. FIFO 2.LRU 3. Optimal

11. Explain the following file concepts: a) File attributes b) File operations c) File types d) Internal file structure
12. (a)Define file? what is file system explain the file access methods or mechanisms. (b)Explain structure of file system
13. What is Directory? Explain directory structures.
14. Explain briefly file or (space) allocation methods in file.
15. Explain file system implementation and directory implementation.
16. List out the various methods for free-space management and explain them.

UNIT-5

1. Explain different types of storage devices or storage structures ?
2. Explain secondary storage or mass storage structure of magnetic disk?
3. What is disc scheduling and disc scheduling algorithms.
   FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK
4. Consider that a disk drive has 5,000 cylinders, numbered 0 to 4,999. The drive is currently serving request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is:
   86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130
   Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all pending requests for each of the following disk scheduling algorithms?
   1. FCFS
   2. SSTF
   3. SCAN
   4. C-SCAN
   5. LOOK
   6. C-LOOK
5. What is RAID? Explain raid structure briefly. What are different RAID levels? Explain them.
6. Discuss about stable storage implementation.
7. What is system protection. Explain goals of system protection, principles and domain of protection.
8. What is system security. Discuss program threats , system & network threats in detail.
9. Explain Access matrix and access control.