**UNIT-1**1. What are the services of Operating System?  
2. Define System Calls? Explain types of System Calls.  
3. Explain Operating System structure.  
**UNIT-2**1. Define Process? Explain the states of process?  
2. What is scheduler? Explain various types of schedulers and their roles.  
3. Explain the significance of Process Control Block and describe its typical elements.  
4. What is the need of Inter Process Communication mechanism? Explain in detail.  
5. Define Thread? Explain Multithreading models?  
6. 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.

**Mid 2**

**UNIT-3**

1. 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.

1. What are the conditions for Resource Deadlock?

**UNIT-4**

1. Explain the following file concepts: a) File attributes b) File operations c) File types d) Internal file structure
2. Explain the following in detail with respect to disk?

a) Seek time

b) Latency

c) Access time

d) Transfer time

1. Explain a) Paging

b) Page table structure

c) Translation look-aside buffer

d) Segmentation

4. Explain Contiguous Memory Allocation.

5. Explain Demand Paging.

**UNIT-5**

1. What is RAID? What are different RAID levels? Explain them.
2. Considerthat 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
7. Explain Mass Storage Disk Structure ?