1. Given a system with n processes, how many possible ways those processes are scheduled?
2. Differentiate process and thread. Describe all the entries of process control block.
3. Describe the differences among short term, medium term & long term scheduling.
4. Describe the actions a kernel takes to context switch between processes.
5. Write the syntax and explain the use of following system calls:
   Fork, exec, wait, exit
6. Why context switching time should be minimum? How it is dependent on hardware support?
7. What will happen when system call is encountered in a user program?
8. What is the main advantage of multiprogramming?
9. Differentiate the APIs and System calls role in OS with suitable example.
10. What is the significance of kernel and user mode in OS? Explain with suitable example
11. What are the advantages of Virtual Machine?
12. Write down the differences between
    a. User Thread and Kernel Thread
    b. Fork () function and clone () function
    c. CPU burst and I/O burst
13. Explain operating system and importance?
14. Write down a short note on Process Explore tool for Windows.
15. What resources are used when a thread is created? How do they differ from those used when a process is created?
16. Write down a program to create two child processes and print following sequence by them
    Child 1: - 2 4 8 16 32 64
    Child 2: - 2 5 8 11 14 17

17. For processes listed in table, draw a chart illustrating their execution using
    (a) FCFS
    (b) SJF and Preemptive SJF (Shortest Remaining time first)
    (c) RR (TQ-2)
    (d) RR(TQ-1)
    Also calculate average turnaround time, average wait time and average waiting time for each algorithm.

Process	Arrival Time	Processing Time
A	0	3
B	1.001	6
C	4.001	4
D	6.001	2

18. For the process listed in table below, draw a chart illustrating their execution using preemptive Non preemptive priority scheduling. A larger priority number has higher priority.

Process	Arrival Time	Burst	Priority
A	0	4	3
B	1.0001	3	4
C	2.0001	3	6
D	3.0001	5	5

19. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds:

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 Gantt charts illustrating the execution of these processes using FCFS, SJF, a nonpreemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1) scheduling.
b. What is the turnaround 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 parta?
d. Which of the schedules in part a results in the minimal average waiting time (over all processes)?

20. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds:

	Arrival time	Burst Time	Priority	Process Type
P1	0	7	1	System
P2	3	8	2	Interactive
P3	5	2	1	System
P4	9	12	5	System
P5	0	2	2	Interactive
P6	2	3	1	Others

Schedule the above process as per following algorithm and find the Average waiting and TAT time.

a. Multi-level queue

System Queue – P-SJF
Interactive – RR-2
Others –FCFS

b. Multi-level feedback queue

Q1 RR-4
Q2 P-SJF
Q3 FCFS