# Operating System

## Solutions

1. Which of the following is used to obtain OS services:

   (a) Library functions                  (b) System calls
   (b) Both A & B                     (d) None of the above

   Solution: Option (b)

2. If we disable interrupts, it is not possible to

   (a) invoke system calls             (b) preempt process from CPU
   (c) indicate compilation of I/O      (d) All of the above

   Solution: Option (d)

3. Which is the service not provided by an OS

   (a) File system manipulation       (b) Memory management
   (c) Process scheduling            (d) compilation of a program

   Solution: Option (d)

4. Process control block does not contain

   (a) Process ID                   (b) User identification number
   (c) Registers                    (d) None of the above

   Solution: Option (d)

5. Which of the process transition is invalid?

   (a) Run→ Ready             (b) Suspend wait→ Suspend ready
   (c) Wait/ Block→ Run        (d) None of the above

   Solution: Option (c)

6. In which of the following case CPU utilization will be higher?

   (a) If all the processes are I/O bound
   (b) Is all the processes are equally CPU bound and I/O bound
   (c) If all the processes are CPU bound
   (d) Both (B) and (C)

   Solution: Option (c)

7. The process in which of the following states will be in secondary memory?

   (a) New, Ready, Wait/Block
   (b) New, Wait/Block, Suspend wait, Suspend ready
   (c) wait/Block, Suspend wait, Suspend ready
   (d) New, Suspend wait, Suspend ready

   Solution: Option (d)

8. Degree of multiprogramming is controlled by

   (a) Long term schedule                    (b) Short term schedule
   (c) Medium term schedule                  (d) Depends on number of CPU's

   Solution: Option (a)

9. Which of the following effects the performance of the CPU?

   (a) LTS                                    (b) STS
   (c) MTS                                    (d) All of the above

   Solution: Option (d)

10. Which technique was introduced because a single job could not keep both the CPU and I/O devices busy?

   (a) Time- sharing                          (b) Spooling
   (c) Preemptive scheduling                  (d) Multiprogramming

   Solution: Option (d)

11. Consider a system with 'M' CPU processors and 'N' processes then how many processes can present in ready, running and blocked state at minimum

(a) 1,0,0　　　　　　　　　　　　　　　(b) 0,1,1
(c) 1,1,0　　　　　　　　　　　　　　　(d) 0,0,0

Solution: Option (d)

12. Consider a system with 'M' CPU processors and 'N' processes then how many processes can be present in ready, running and blocked state at maximum

(a) N, M, N　　　　　　　　　　　　　(b) N, M, M
(c) M, N, M　　　　　　　　　　　　　(d) N, N+M, M

Solution: Option (a)

13. Consider the processes $P_1$, $P_2$, $P_3$ arrived in the sequence $P_2$, $P_3$, $P_1$ and the burst time of the processes are 3, 3, 24 respectively. What is the average TAT?

(a) 30　　　　　　　　　　　　　　　　(b) 10
(c) 40　　　　　　　　　　　　　　　　(d) 35

Solution: Option (b)

14. Turnaround time TAT of a process P is

(a) $CT_i - At_i$ where $CT_i$ is Completion time and $AT_i$ is Arrival time
(b) $BT_i + WT_i$ where $BT_i$ is Burst time and $WT_i$ is Waiting time
(c) $(CT_i + BT_i + WT_i - At_i) / 2$
(d) All of the above

Solution: Option (d)

15. FCFS suffers with
(If the processes with highest Burst Time arrives first)

(a) Highest Average Response time
(b) Highest Average TAT
(c) Highest Average waiting time

(d) All of the above

Solution: Option (d)

16. Consider the following processes that arrive as shown as below follows FCFS scheduling method. What is the Average TAT?

| Process | Arrival Time | Burst Time |
|---------|--------------|------------|
| $P_1$ | 0 | 3 |
| $P_2$ | 2 | 4 |
| $P_3$ | 4 | 2 |
| $P_4$ | 4 | 1 |

(a) 4.95 ms                                    (b) 4.75 ms
(c) 3.75 ms                                    (d) 5 ms

Solution: Option (b)

17. What is the throughput for above problem?

(a) 0.3 jobs/sec                               (b) 0.4 jobs/sec
(c) 0.5 jobs/sec                               (d) 0.6 jobs/sec

Solution: Option (b)

18. What is the average Response time for above problem?

(a) 2.25                                       (b) 3.25
(c) 4.5                                         (d) 5

Solution: Option (a)

19. What is the average waiting time for the above problem?

(a) 1.25                                       (b) 2.25
(c) 2.5                                         (d) 3.5

Solution: Option (b)

20. What is the CPU utilization?

    (a) 50%                                   (b) 90%

    (c) 100%                                  (d) None

Solution: Option (c)