



## **Mid-term Assignment**

**Course Name:** Operating System

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BS (SE) Section: A

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# Mid Semester Assignment

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Subject: Operating System Concepts

## Section A

Question No: 1 ( M - 1 )

*The hardware mechanism that enables a device to notify CPU is called an -----*

- ▶ Interrupt
- ▶ Signal
- ▶ Trap
- ▶ Process

Question No: 2 ( M - 1 )

*The section of the process control block comprises of page and segment tables*

- ▶ Memory related information
- ▶ Accounting information
- ▶ Register information
  
- ▶ Scheduling information

Question No: 3 ( M - 1 )

*The ----- system call suspends the calling process.*

- ▶ fork
- ▶ wait
- ▶ exec
- ▶ exit

Question No: 4 ( M - 1 )

*In -----addressing, the recipient is not required to name the sender.*

- ▶ Symmetric
- ▶ Asymmetric
- ▶ Both symmetric and asymmetric
- ▶ None of the given options

Question No: 5 ( M - 1 )

*----- command gives a snapshot of the current processes.*

- ▶ ps

- ▶ top
- ▶ who
- ▶ ls

Question No: 6 ( M - 1 )

-----**command to resume the execution of a suspended job in the foreground**

- ▶ fg
- ▶ bg
- ▶ jobs
- ▶ kill

Question No: 7 ( M - 1 )

**You can use the ----- command to display the status of suspended and background processes**

- ▶ fg
- ▶ bg
- ▶ jobs
- ▶ kill

Question No: 8 ( M - 1 )

**You can terminate a foreground process by pressing -----**

- ▶ <Ctrl-A>
- ▶ <Ctrl-C>
- ▶ <Ctrl-Z>
- ▶ None of the given options

Question No: 9 ( M - 1 )

**A time sharing system is**

- ▶ Multi-tasking
- ▶ Interactive
- ▶ Multi user
- ▶ All of these

Question No: 10 ( M - 1 )

**The main characteristic of a Real time system is**

- ▶ Efficiency
- ▶ Large Virtual Memory
- ▶ Large secondary storage device
- ▶ Usability

Question No: 11 ( M - 1 )

**Shared libraries and kernel modules are stored in \_\_\_\_\_ directory**

- ▶ /bin
- ▶ /dev
- ▶ /boot
- ▶ /lib

Question No: 12 ( M - 1 )

**\_\_\_\_\_ scheduler selects the process from the job pool and put them in main memory.**

- ▶ Long term
- ▶ Short term
- ▶ Medium term
- ▶ Swapper

Question No: 13 ( M - 1 )

**In indirect inter process communication, a sender \_\_\_\_ mention the name of the recipient.**

- ▶ do
- ▶ do not

Question No: 14 ( M - 1 )

**A \_\_\_\_\_ is an integer variable that, apart from initialization is accessible only through two standard atomic operations: wait and signal.**

- ▶ Semaphore
- ▶ Monitor
- ▶ Critical region
- ▶ Critical section

Question No: 15 ( M - 1 )

**A semaphore that cause Busy-Waiting is termed as \_\_\_\_\_.**

- ▶ Spinlock
- ▶ Monitor
- ▶ Critical region
- ▶ Critical section

Question No: 16 ( M - 1 )

***The execution of critical sections must NOT be mutually exclusive***

- ▶ True
- ▶ False

Question No: 17 ( M - 1 )

***The performance of Round Robin algorithm does NOT depends heavily on the size of the time quantum.***

- ▶ True
- ▶ False

Question No: 18 ( M - 1 )

***The following requirement for solving critical section problem is known as \_\_\_\_\_.***

***“There exists a bound on the number of times that other processes are allowed to enter their critical sections after a process has made a request to enter its critical section and before that request is granted.”***

- ▶ Progress
- ▶ Bounded Waiting
- ▶ Mutual Exclusion
- ▶ Critical Region

Question No: 19 ( M - 1 )

***The critical section problem can be solved by the following except***

- ▶ Software based solution
- ▶ Firmware based solution
- ▶ Operating system based solution
- ▶ Hardware based solution

Question No: 20 ( M - 1 )

***\_\_\_\_\_ is also called Swapper.***

- ▶ Swap space
- ▶ Medium term scheduler
- ▶ Short term scheduler
- ▶ Long term scheduler

### **Section B**

Question No: 21 ( M - 2 )

***Write the formula/ procedure for calculating the waiting time in preemptive Shortest Job First scheduling.***

Question No: 22 ( M - 3 )

***If a process exits and there are still threads of that process running, will they continue to run?***

Question No: 23 ( M - 5 )

***Considering the Resource sharing feature of thread, what do you think is 'resource sharing' an advantage of a thread or disadvantage of a thread. Explain yours answer briefly.***

## **Section - A**

### **MCQ's Answers:**

- 1) Interrupt
- 2) Register information
- 3) Wait
- 4) A symmetric
- 5) Ps
- 6) Fg
- 7) Jobs
- 8) <Ctrl-C>
- 9) All of these
- 10) Usability
- 11) /lib
- 12) Long term
- 13) Do not
- 14) Semaphore
- 15) Spinlock
- 16) False
- 17) True
- 18) Bounded waiting
- 19) Firmware
- 20) Medium term scheduler

## Section – B

### Q#21

In preemptive shortest job first scheduling, jobs are put into ready queue for execution as they arrive. The processes which are having the shortest burst time will be executed first and when it is done means preempted so it is deleted from execution.

Process	Burst Time	Arrival Time
P1	21	0
P2	3	1
P3	6	2
P4	2	3

P1	P2	P4	P2	P3	P1
0	1	3	5	6	12
					32

Average waiting time will be:  $((5-3) + (6-2) + (12-1))/4 = 4.25\text{ms}$

1) P1 arrives first, hence its execution starts immediately, but just after process 1ms process P2 arrives with the burst time of 3ms which is less than P1 hence the process P1(1ms done, 20ms left) is preempted and process P2 is executed.

When process P2 is executed, so after P2 process P3 arrives but have greater burst time than P2, hence execution of P2 continues but after some time P4 arrives with the burst time of 2ms so as a result (2ms is done 1ms left) is preempted and P4 is executed.

When the process P4 is executed so P2 is picked up and finishes then P2 will get executed and in last P1 will be executed.

Preemptive SJF is also called shortest remaining time first because at any given point of time, the job with the shortest remaining time will be executed first.

Formula: Void Process Proc [], int n, int wt [])



**Q#22)**

Answer: No. When a process is terminated, so it takes everything with it. In this we include the process structure, the memory space, etc. Including threads

**Q#23)**

Answer: resource sharing is advantage of thread because by default threads share common code data and other resources which allow multiple tasks to be performed simultaneously in a single address space.