# :: MID TERM EXAM ::

**ID: 11533**

**Name: Ashir Ali Khan**

**Subject: Software Engineering**

**Teacher: Sir Daud**


**Iqra National University**

Question No: 1
***The hardware mechanism that enables a device to notify CPU is called an ----------***
► Interrupt

Question No: 2
The section of the process control block comprises of page and segment tables
► Memory related information

Question No: 3
***the ---------- system call suspends the calling process.***
► wait

Question No: 4
***In ---------addressing, the recipient is not required to name the sender.***
► Asymmetric

Question No: 5
***-------- command gives a snapshot of the current processes.***
► ps

Question No: 6
***----------command to resume the execution of a suspended job in the foreground***
► fg

Question No: 7
***You can use the ---------- command to display the status of suspended and background processes***
► jobs

Question No: 8
**You can terminate a foreground process by pressing ----------**
► <Ctrl-C>

Question No: 9
***A time sharing system is***
► All of these

Question No: 10
***The main characteristic of a Real time system is***
► Usability

Question No: 11
***Shared libraries and kernel modules are stored in _____ directory***
► /lib

Question No: 12

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

► Long term

Question No: 13

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

► do not

Question No: 14

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

► Semaphore

Question No: 15

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

► Spinlock

Question No: 16

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

► False

Question No: 17

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

► True

Question No: 18

***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."***

► Bounded Waiting

Question No: 19

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

► Firmware based solution

Question No: 20

***_____ is also called Swapper.***

► Medium term scheduler

# ***Section B***

**Question No: 21**

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

**Answer:**

I'll write an example with all the steps.

| Process | CPU Time | Arrival |
|---|---|---|
| P1 | 9 | 0 |
| P2 | 2 | 2 |

At t=0, P1 arrives starts execution.
At t=2, P2 arrives, P1 CPU time remaining=7 and P2=2, So, P1 is removed or preempted and P2 starts execution for 2 CPU time. Once P2 completes, execution is passed again to P1 to complete its remaining 7 CPU time.

| P1 | P2 | P1 |
|---|---|---|

0 2 4 11

Completion Time of P1= 11

Completion Time of P2= 04

Turn Around time of P1 = Completion Time-Arrival time= 11-0=11

Turn Around time of P2 = 04 – 02=02

Waiting Time of P1= Turn Around Time – CPU Time= 11-9=2

Waiting Time of P2= 02-02=0

Average Waiting time= Waiting Time of P1+P2/Number of process=$\frac{2+0}{2}$ = $\frac{2}{2}$=1

**Question No: 22**
***If a process exits and there are still threads of that process running, will they continue to run?***

**Answer:**

No, they will not continue to run because a thread is just part of the process. When a process exits, it takes everything with it. This includes the process structure, the memory space, etc. including threads because the process is the execution environment; without it, a thread cannot execute...

**Example:**

Suppose a process is the universal set and threads are present inside the universal set (Process). So, if we remove the universal set, it will automatically exits the threads.

---

**Question No: 23**

***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.***

Answer:

Resource sharing is considered as the advantage which allows multiple tasks to be performed simultaneously in a single address space. Ill briefly give you the concept of resource sharing advantage in multi threads. You can find the many practical problems day to day life where multiple threads can be very helpful in solving those problem by using shared resources. Producer consumer problem is also called as bounded-buffer problem. This problem is a classic example of a multi-process synchronization problem. In this problem there are two threads:

1. Producer

2. Consumer

In this problem these two threads share a common area called as buffer (resource sharing), where in the producer produces the data items and at the same time the consumer consumes those items produced by the producer. Here consumer looks at the buffer (Shared resource), whether the item has been produced or not. Although they end up with the synchronization problem but the thing is the commonly shared resources allows multiple tasks to be performed simultaneously in a single address space.

---