**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY ,GREATER NOIDA**

**(An Autonomous Institute Affiliated to AKTU, Lucknow)**

**Assignment-2**

**Subject Name: Operating System (ACSE0403A)**

1. Consider the set of processes with arrival time (in milliseconds), CPU burst time (in milliseconds) , and priority (0 is the highest priority) shown below. None of the processes have I/O burst time.

|  |  |  |  |
| --- | --- | --- | --- |
| Process | Arrival time | Burst Time | Priority |
| P1 | 0 | 11 | 2 |
| P2 | 5 | 28 | 0 |
| P3 | 12 | 2 | 3 |
| P4 | 2 | 10 | 1 |
| P5 | 9 | 16 | 4 |

The average waiting time (in milliseconds) of all the processes using preemptive priority scheduling algorithm is \_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Considrer the following CPU processes with arrival times (in miliseconds) and length of CPU bursts (in miliseconds) as given below:

|  |  |  |
| --- | --- | --- |
| Process | Arrival time | Burst time |
| P1 | 0 | 7 |
| P2 | 3 | 3 |
| P3 | 5 | 5 |
| P4 | 6 | 2 |

If the pre-emptive shortest remaining time first scheduling algorithm is used to schedule the processes, then the average waiting time across all processes is \_\_\_\_\_\_\_\_\_ milliseconds.

|  |  |  |
| --- | --- | --- |
| Process Name | Arrival Time | Execution Time |
| A | 0 | 6 |
| B | 3 | 2 |
| C | 5 | 4 |
| D | 7 | 6 |
| E | 10 | 3 |

1. Consider the following set of processes that need to be scheduled on a single CPU. All the times are given in milliseconds.

Using the *shortest remaining time first* scheduling algorithm, the average process turnaround time (in msec) is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Consider the 3 processes, P1, P2 and P3 shown in the table.

|  |  |  |
| --- | --- | --- |
| **Process** | **Arrival time** | **Time Units Required** |
| P1 | 0 | 5 |
| P2 | 1 | 7 |
| P3 | 3 | 4 |

The completion order of the 3 processes under the policies FCFS and RR2 (round robin scheduling with CPU quantum of 2 time units) are

 (A) **FCFS:** P1, P2, P3 **RR2:** P1, P2, P3

 (B) **FCFS:** P1, P3, P2 **RR2:** P1, P3, P2

 (C) **FCFS:** P1, P2, P3 **RR2:** P1, P3, P2

 (D) **FCFS:** P1, P3, P2 **RR2:** P1, P2, P3

1. Explain the concept of ‘process’. also describe the contents of a process control block(PCB).
2. Explain about process scheduling? Explain different types of schedulers?
3. Explain about different multithreading models.
4. Differentiate between process and threads.
5. Write short note on CPU scheduling criteria.
6. Explain the problem with FCFS CPU scheduling algorithm.