|  |  |  |
| --- | --- | --- |
| **Process** | **Burst Time** | **Priority** |
| **P1**  **P2**  **P3**  **P4**  **P5** | **10**  **1**  **2**  **1**  **5** | **3**  **1**  **3**  **4**  **2** |

1. **Gantt Charts**
2. **FCFS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **P1** | **P2** | **P3** | **P4** | **P5** |

**0---------------10 ---------------11------------------- 13-----------------------14---------------------19**

1. **SJF**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **P2** | **P4** | **P3** | **P5** | **P1** |

**0---------------1-------------------2---------------------4------------------------9------------------------19**

1. **Non-Preemptive Priority**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **P2** | **P5** | **P1** | **P3** | **P4** |

**0---------------1--------------------6--------------------16----------------------18------------------------19**

1. **Round Robin**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P1** | **P2** | **P3** | **P4** | **P5** | **P1** | **P3** | **P5** | **P1** | **P5** | **P1** | **P5** | **P1** | **P5** | **P1** | **P1** | **P1** | **P1** | **P1** |

**1--------2------3------4------5------6------7-----8------9-----10-----11----12----13-----14----15----16----17-----18---19**

1. **Turnaround Time**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Process** | **FCFS** | **SJF** | **Non-Preemptive** | **Round-robin** |
| **P1**  **P2**  **P3**  **P4**  **P5** | **10**  **11**  **13**  **14**  **19** | **19**  **1**  **4**  **2**  **9** | **16**  **1**  **18**  **19**  **6** | **19**  **2**  **7**  **4**  **14** |

1. **Waiting Time**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Process** | **FCFS** | **SJF** | **Non-Preemptive** | **Round-robin** |
| **P1**  **P2**  **P3**  **P4**  **P5** | **0**  **10**  **11**  **13**  **14** | **9**  **0**  **2**  **1**  **4** | **6**  **0**  **16**  **18**  **1** | **9**  **1**  **5**  **3**  **9** |

1. **Minimum Average waiting time**
2. **FCFS**

**(0+10+11+13+14)/5= 9.6**

1. **SJF**

**(9+0+2+1+4)/5=3.2**

1. **Non-Preemptive**

**(6+0+16+18+1)/5=8.2**

1. **Round – robin**

**(9+1+5+3+9)/5=5.4**

**From the above values 3.2 is the minimum value i.e,**

**SJF has the minimum average waiting time.**

**5.13)**

Shortest job first and priority based scheduling algorithms results in starvation

In Priority scheduling algorithms low priority processes may never get chance to execute which leads to starvation.

Starvation is possible in shortest job scheduling when there is a system with many small processes being run.