All processes arrive at time 0.

1.FCFS

Order: A → B → C → D → E

Calculate completion times (sum of running times so far):

|  |  |  |  |
| --- | --- | --- | --- |
| Process | Running Time | Completion Time | Turnaround Time (=Completion - Arrival) |
| A | 10 | 10 | 10 |
| B | 6 | 10 + 6 = 16 | 16 |
| C | 2 | 16 + 2 = 18 | 18 |
| D | 4 | 18 + 4 = 22 | 22 |
| E | 8 | 22 + 8 = 30 | 30 |

Mean turnaround time = (10 + 16 + 18 + 22 + 30) / 5 = 19.2 minutes

2. Priority Scheduling

Priority order: B (5) → E (4) → A (3) → C (2) → D (1)

Calculate completion time and turnaround:

|  |  |  |  |
| --- | --- | --- | --- |
| Process | Running Time | Completion Time | Turnaround Time |
| B | 6 | 6 | 6 |
| E | 8 | 6 + 8 = 14 | 14 |
| A | 10 | 14 + 10 = 24 | 24 |
| C | 2 | 24 + 2 = 26 | 26 |
| D | 4 | 26 + 4 = 30 | 30 |

Mean turnaround time = (6 + 14 + 24 + 26 + 30) / 5 = 20 minutes

3. SJF

Order by running time: C(2) → D(4) → B(6) → E(8) → A(10)

Calculate completion and turnaround:

|  |  |  |  |
| --- | --- | --- | --- |
| Process | Running Time | Completion Time | Turnaround Time |
| C | 2 | 2 | 2 |
| D | 4 | 2 + 4 = 6 | 6 |
| B | 6 | 6 + 6 = 12 | 12 |
| E | 8 | 12 + 8 = 20 | 20 |
| A | 10 | 20 + 10 = 30 | 30 |

Mean turnaround time = (2 + 6 + 12 + 20 + 30) / 5 = 14 minutes

4. Round Robin (Quantum = 4)

Run each process for 4 minutes in order repeatedly until done.

|  |  |  |  |
| --- | --- | --- | --- |
| Time Slice | Running Times Remaining (A,B,C,D,E) | Completed Process | Completion Time Updated |
| 0-4 | A=6, B=2, C=0, D=4, E=8 | C done (2<4) | C completes at 6 |
| 4-8 | A=6, B=2, D=4, E=8 |  |  |
| 8-12 | A=2, B=2, D=4, E=4 |  |  |
| 12-16 | A=2, B=2, D=0, E=4 | D done (4 done) | D completes at 16 |
| 16-20 | A=2, B=2, E=0 | E done (4 done) | E completes at 20 |
| 20-22 | A=0, B=2 | A done (2 left) | A completes at 22 |
| 22-24 | B=0 | B done (2 left) | B completes at 24 |

Completion times:

|  |  |
| --- | --- |
| Process | Completion Time |
| A | 22 |
| B | 24 |
| C | 6 |
| D | 16 |
| E | 20 |

Mean turnaround time = (22 + 24 + 6 + 16 + 20) / 5 = 17.6 minutes

Summary Table

|  |  |
| --- | --- |
| Algorithm | Mean Turnaround Time (minutes) |
| FCFS | 19.2 |
| Priority Scheduling | 20 |
| SJF | 14 |
| Round Robin (Q=4) | 17.6 |