# CSE/IT Batch: Hinglish

# Operating System

## CPU Scheduling Part - 3

**DPP-03**

**1.** Consider 4 processes $P_1$, $P_2$, $P_3$ and $P_4$ with respective times in below table.

| Process | AT | CPU/Burst time | I/O time | CUP time |
|---|---|---|---|---|
| $P_1$ | 0 | 6 | 5 | 3 |
| $P_2$ | 4 | 3 | 22 | 3 |
| $P_3$ | 7 | 7 | 0 | 0 |
| $P_4$ | 20 | 8 | 3 | 2 |

Using SRTF algorithm find the completion time of $P_1$, $P_2$, $P_3$ & $P_4$ and also note that processes performs CPU operation followed by I/O operation and followed by CPU operation again. Multiple process can perform I/O operation at a same time.

(a) 15, 37, 20, 29 (b) 14, 36, 19, 28
(c) 16, 37, 20, 29 (d) none

**2.** Choose the correct statements about MFQS.

(i) MFQS tries to run a process having shorter Burst time which in turn leads to optimize the turn around time.
(ii) A process which is waiting for longer period of time in lower priority queue may be moved to a higher priority queue which prevents starvation.
(iii) This algorithm is less flexible than multilevel queue scheduling.
(iv) none

(a) (i) (ii) (b) (ii) (iii)
(c) (i) (iii) (d) (iv)

**3.** Consider four processes $P_1$, $P_2$, $P_3$ and $P_4$ with execution times and arrival times below.

| Process | Execution time/ Burst time | Arrival time |
|---|---|---|
| $p_1$ | 29 | 0 |
| $p_2$ | 25 | 10 |
| $p_3$ | 15 | 25 |
| $p_4$ | 20 | 40 |

What is the completion time for process $P_3$?

(a) 44 (b) 45
(c) 46 (d) 47

**4.** Consider 4 Jobs $P_1$, $P_2$, $P_3$ and $P_4$ with the arrival, Burst times below in the table.

| Process | Burst Time |
|---|---|
| $P_1$ | 5 |
| $P_2$ | 2 |
| $P_3$ | 9 |
| $P_4$ | 3 |

What is the completion time of $P_4$ under round robin scheduling policy with time quantum of two units?

(a) 12 (b) 13
(c) 14 (d) 15

**5.** Consider 4 processes $P_1$, $P_2$, $P_3$ and $P_4$ with arrival and Burst times given below in the table.

| PID | AT | BT |
|---|---|---|
| $P_1$ | 0 | 7 |
| $P_2$ | 1 | 4 |
| $P_3$ | 2 | 2 |
| $P_4$ | 3 | 3 |

Using round robin scheduling policy with time quantum 1, find completion order and number of context switches, note that ignore context switches at time zero and at the end.

(a) Total context switches = 14 and completion order is $P_3$, $P_2$ $P_4$ $P_1$
(b) Total context switches = 15 and completion order is $P_3$, $P_2$ $P_4$ $P_1$
(c) Total context switches = 15 and completion order is $P_3$, $P_4$ $P_2$ $P_1$
(d) Total context switches = 15 and completion order is $P_3$, $P_1$ $P_2$ $P_4$

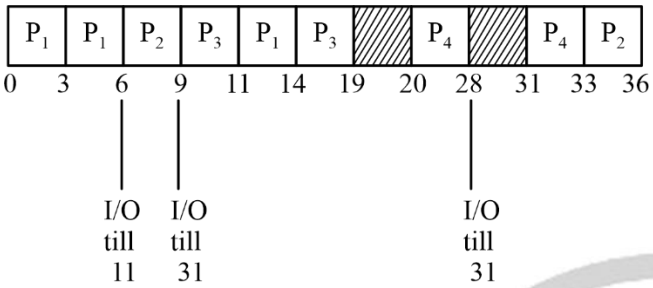
# Answer Key

1. **(b)**
2. **(a)**
3. **(a)**
4. **(b)**
5. **(b)**

# Hints and solutions

**1. (b)**

**GANTT Chart**

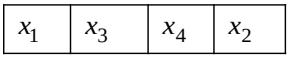



**2. (a)**

This algorithm is more flexible than multilevel queue scheduling.

**3. (a)**

**GANTT Chart**



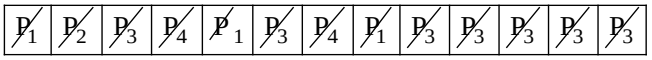

Completion time of $P_3$

$P_3 = 44$

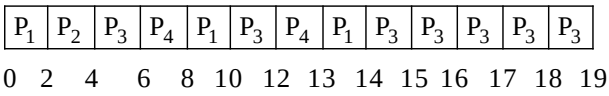
**4. (b)**

**GANTT Chart]**

Ready Queue

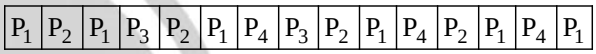



CPU

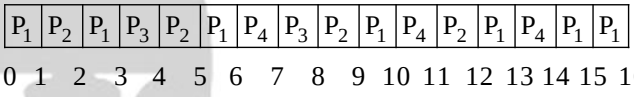



**5. (b)**

Ready Queue




CPU




Total context switches = 15.

Completion order = $P_3$, $P_2$, $P_4$, $P_1$.