CSE/IT Batch : Hinglish

Operating System

CPU Scheduling Part - 2

DPP-02

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. Inter process communication

(a) Helps processes to synchronize activity
(b) Is not helpful
(c) Is required to all processes
(d) None

4. 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
x_1	29	0
x_2	25	10
x_3	15	25
x_4	20	40

What is the completion time for process P_3?

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

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

Process	Brust 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

6. Choose the correct statements from the following

(i) inter process communication is used to exchange data between multiple processes.
(ii) shared memory is a memory, shared among only two processses.
(iii) IPC method helps to speedup modularity.
(iv) none
(a) (i) & (ii)
(b) (ii) & (iii))
(c) (iii) & (i)
(d) (iv)

7. 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

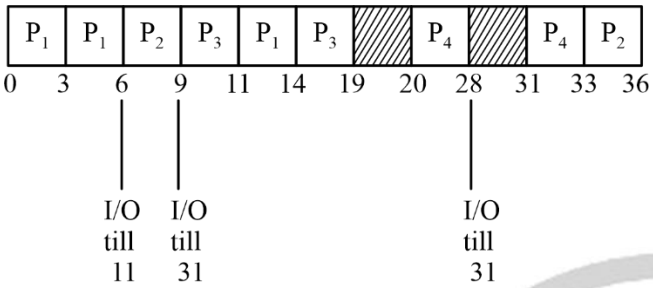
Answer Key

1. **(b)**
2. **(a)**
3. **(a)**
4. **(a)**
5. **(b)**
6. **(c)**
7. **(b)**

Hints and solutions

1. (b)

GANTT Chart



2. (a)

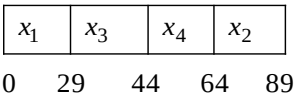
This algorithm is more flexible than multilevel queue scheduling.

3. (a)

Synchronization is important part of IPC which helps process to syncronize activity.

4. (a)

GANTT Chart



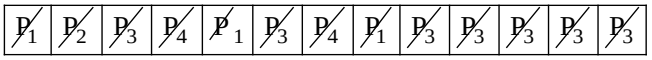
Completion time of P_3

$P_3 = 44$

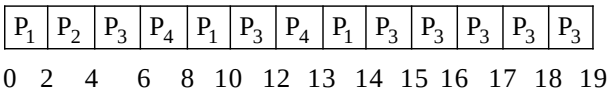
5. (b)

GANTT Chart]

Ready Queue



CPU

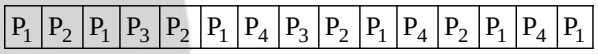


6. (c)

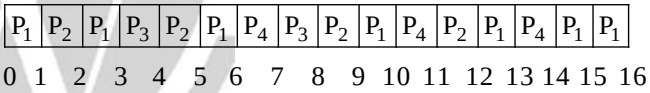
(ii) Shared memory is a memory, shared between two or more processes.

7. (b)

Ready Queue



CPU



Total context switches = 15.

Completion order = P_3, P_2, P_4, P_1.

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