

CSE321 MID

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Section : 04

I have not shared any answers with anyone, did not help anyone and did not take help from anyone for this exam. The answers I have given here are done by myself only.

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Ans: to the Q. No 1

(a)

Operating system started during the boot process. The process of boot depend on the system. The main job of boot process is to start up the OS. The first program loaded on startup is Kernel, it handles the rest of startup.

(b)

We need to install operating system because it allows to communicate with the computer without knowing how to speak the computer's language.

①

Process changes its state from running to ready when interrupt occurs. It changes from running to waiting when input output event occurs. It's changes running to ready because of process scheduler. Also it changes from running to waiting when it request for an I/O.

②

③

Data parallelism means concurrent execution of the same task on each multiple computing core.

For example, if we take a array of N size, ~~and sum the cont~~ for a single core system, one thread will do sum the elements of that $[0] \dots [N-1]$ array, beside thread A running on core 0 can sum the elements $[0] \dots [N/2-1]$. For thread B running on core 1, can sum the elements $[N/2] \dots [N-1]$. So we can see

two threads running parallelly.

For task parallelism means concurrent execution of the different task on multiple computing cores.

for example, for above example, task parallelism involve two threads while performing a operation on the array of elements.

$$\textcircled{e} \quad \frac{P_0-1}{P} + P_0$$

Yes, multilevel queue prevent starvation. Because -

- (1) It is more flexible
- (2) It allows different processes to move between different queues.

Ans: to the Q. No 3

We Know,

$$\text{Amdahl's law} = \frac{1}{S + \frac{1-S}{N}}$$

Given 4 processor,

$$\frac{1}{0.4 + \frac{1-0.4}{4}} \quad \textcircled{9}$$

$$= 1.818$$

For 8,

$$\frac{1}{0.4 + \frac{1-0.4}{8}}$$

$$= 2.10$$

$$\text{Now } 30\% \text{ of } 4 = \frac{30 \times 1.818}{100}$$
$$= 0.54$$

$$\text{So } (0.54 + 2.10) = 2.35$$

As it's bigger than value in 8 coro .

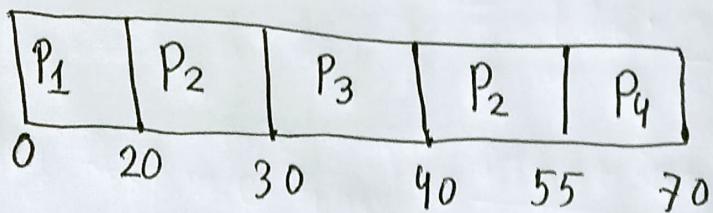
So I would not buy .

Ans: to the Q. No 4

<u>Process</u>	<u>Arrival Time</u>	<u>Burst time</u>
P ₁	0	20
P ₂	15	25
P ₃	30	10
P ₄	45	15

(a)

Gantt Chart:



(b)

<u>Process</u>	<u>Arrival Time</u>	<u>Burst Time</u>	<u>Waiting Time</u>	<u>T.A.T time</u>
P ₁	0	20	0	20
P ₂	15	25	15	40
P ₃	30	10	0	10
P ₄	45	15	10	25

For process 2 total waiting time = 15

For process 2 total turn around time = 40

There are 3 context switches needed.

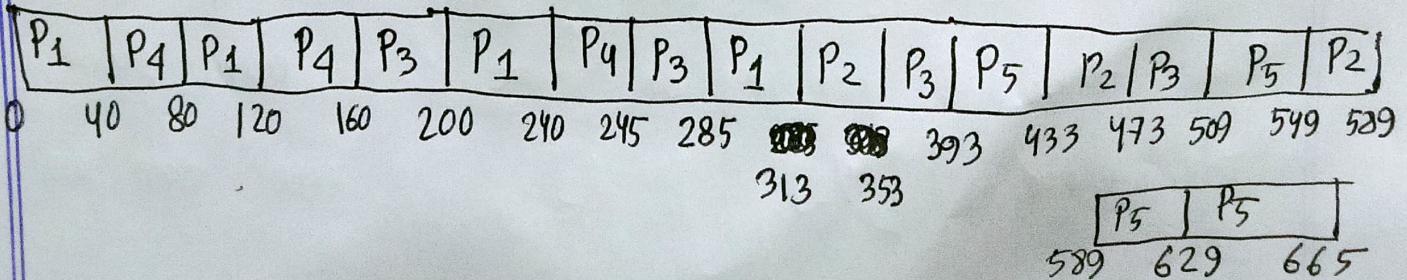
Ans: to the Q. No 5

Given, q = 40

Process	Arrival Time	Burst time
P ₁	0	148
P ₂	250	120
P ₃	100	156
P ₄	25	85
P ₅	300	156

@

Gantt chart



(b)

Process	AT	BT	WT	Response time
P ₁	0	148	165	$(0-0) = 0$
P ₂	250	120	135	$(313-250) = 63$
P ₃	100	156	253	$(160-100) = 60$
P ₄	25	85	219	$(40-25) = 15$
P ₅	300	156	209	$(393-300) = 93$

$$\therefore \text{Avg W.T time} = \frac{165 + 135 + 253 + 219 + 209}{5}$$
$$= 196.2$$

$$\therefore \text{Avg Response time} = \frac{0 + 63 + 60 + 15 + 93}{5}$$
$$= 46.2$$

(Ans)