

G.H. Raisoni College of Engineering Ngp.
2020-2021 ODD TERM

CAE-1 Examination For Split - II Courses
Winter - 2020

DEPARTMENT: ARTIFICIAL INTELLIGENCE

SEM/SECTION: 3 / A

DATE: 14/07/2020

SUBJECT: OPERATING SYSTEM

ROLL NO.: 49

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REG. NO.: 2019AATF1117028

CO1.

a. Symmetric Multiproc- Asymmetric Multiproc-
-essing -ing

- | | |
|--|---|
| ① Each processor executes the tasks in the OS. | ① Only the master processor executes the tasks of the OS. |
|--|---|

- | | |
|--|------------------------|
| ② The processor takes the processes from | ② The master processor |
|--|------------------------|

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a common prepared queue or there may be a queue prepared for each processor.

assigns processes to slave processors, or they have some predefined processes.

③ The entire processor in symmetric multi-processing has the same architecture.

③ All processors in asymmetric multi-processing can have the same or different architecture.

④ All processor ~~in~~ communicate with another processor through shared memory.

④ The processors do not ~~to~~ communicate since they are controlled by the master processor.

⑤ If a processor fails, the calculation capacity of the system is reduced.

⑤ If a master processor fails, a slave goes to the master processor to continue the execution. If a slave processor fails, its

task is changed to other processors.

The advantages of the multiprocessing system are:

- ① Cost Saving: Parallel system shares the memory, buses, peripherals, etc. Thus, saves money as compared to multiple single systems.
- ② Increased Throughput: By increasing the number of processors, more work can be completed in a unit time.
- ③ Increased Reliability: As the workload is distributed among several processors which results in increased reliability.

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Hanvi

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Disadvantage :

① Large Main Memory Required :

All the processors in the multiprocessor system share the memory. So a much larger pool of memory is required as compared to single processor systems.

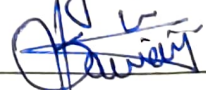
CO2.

●

FCFS:

Process	Arrival Time	Burst Time	Turnaround Time	Waiting Time
P ₁	0	2	2	0
P ₂	0	1	3	2
P ₃	0	8	11	3
P ₄	0	4	15	11
P ₅	0	5	20	15

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P_1	P_2	P_3	P_4	P_5	
0	2	3	11	15	20

Turnaround time \Rightarrow End time - Arrival time
 Waiting time \Rightarrow Turnaround time - Burst time

$$\text{Avg. Turnaround Time} = \frac{\text{Turnaround time}}{\text{No. of process}}$$

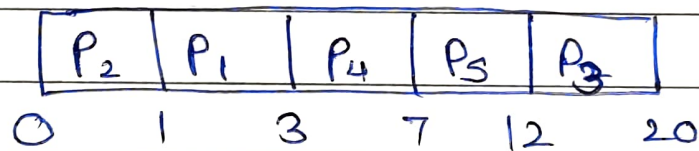
$$= \frac{51}{5}$$

$$= 10.2$$

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~~Answer~~
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SJF:

Process	Arrival Time	Burst Time	Turnaround Time	Waiting Time
P ₁	0	2	3	1
P ₂	0	1	1	0
P ₃	0	8	20	12
P ₄	0	4	7	3
P ₅	0	5	12	7



$$\text{Avg. Turnaround Time} = \frac{3+1+20+7+12}{5}$$

$$= \frac{43}{5}$$

$$= 8.6$$

Pg. no. 06

[Signature]

14/07/2020

$$\text{Waiting Time} = \frac{\text{Turnaround time} - \text{Burst Time}}{\text{No. of Process}}$$

$$= \frac{1 + 0 + 12 + 3 + 7}{5}$$

$$= \frac{23}{5}$$

$$= 4.6$$

③③ Non preemitive priority:

Process	AT	Burst Time	Priority	TAT	WT
P ₁	0	2	2	3	1
P ₂	0	1	1	1	0
P ₃	0	8	4	20	12
P ₄	0	4	2	7	3
P ₅	0	5	3	12	7

Pg. no. 07
~~Chaitin~~

14/07/2020

P_2	P_1	P_4	P_5	P_3
0	1	3	7	12 20

Aug. $TAT = \frac{3+1+20+7+12}{5} = 8.6$

Aug. $WT = \frac{23}{5} = 4.6$

Round Robin (RR) Quantum =

Ready Process:

P_1	P_2	P_3	P_4	P_5	P_3	P_4	P_5	P_3	P_5	P_3
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Gantt:

P_1	P_2	P_3	P_4	P_5	P_3	P_4	P_5	P_3	P_5	P_3
0	2	3	5	7	9	11	13	15	17	18 20

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Hanuman

14/07/2020

Avg. Turn around
Time :

Completion - Arrival

Nb. of process

$$\text{FCFS} = \frac{2+3+11+15+20}{5} \text{ s}$$
$$= 10.2$$

$$\text{SJF} = \frac{43}{5} = \del{8.6} 8.6$$

$$\text{Non-preemptive} = \frac{43}{5} = 8.6$$

$$\text{RR} = \frac{56}{5} = 11.2$$

Pg. no. 09

Atanu

14/07/2020