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United International University
Course: Operating Systems (CSE 4509), Spring 2025
Class Test 2, Set B
Total Marks: 20, Time: 30 minutes

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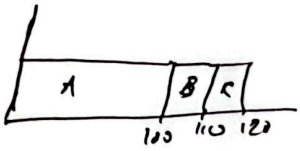
1. What is the convoy effect? Show an example where Shortest Job First (SJF) can suffer from this effect. [4]

• A number of ~~relatively~~ Short potential consumer · get queued behind the high-weight consumer. of a resource.

example:

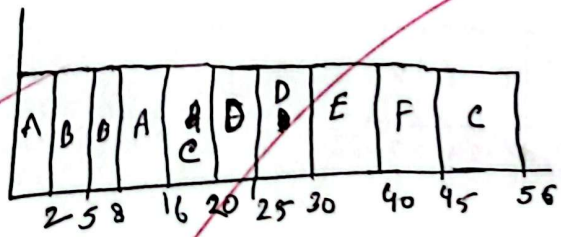
process	Arrival	Dur
A	0	100
B	10	10
C	10	10



04

2. Draw the Gantt chart using STCF algorithm and find the average turnaround time and average response time from the following data: [6]

Process	A	B	C	D	E	F
Arrival (ms)	0	2	5	20	25	40
Duration (ms)	10	6	15	10	10	5



06

Avg. turnaround time = $\frac{(16-0)+(8-2)+(56-5)+(30-20)+(40-25)+(45-40)}{6}$

= 17.16

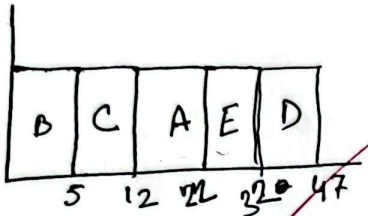
Avg response time = $\frac{(0-0)+(2-2)+(16-5)+(20-20)+(30-25)+(40-40)}{6}$

= 2.66

3. Draw the Gantt chart using SJF algorithm and find the average turnaround time and average waiting time from the following data: (waiting time is the sum of intervals where a process is in Ready state) [5]

Process	A	B	C	D	E
Arrival	0	0	5	10	15
Burst Time	10	5	7	15	10

05



$$\text{turn} = \frac{(22-0)+(5-0)+(12-5)+(47-10)+}{5}$$

$$= 17.6$$

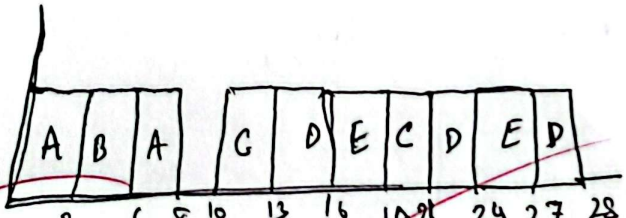
$$\text{avg waiting time} = \frac{(12-0)+(0-0)+(5-5)+(32-10)+}{5}$$

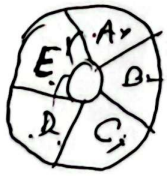
$$= 8.2$$

4. Draw the Gantt chart using the RR algorithm and find the average response time. **Time slice = 3 ms** [5]

Process	A	B	C	D	E
Arrival (ms)	0	2	10	10	15
Duration (ms)	5	3	5	7	6

05





$$\text{Avg response time} = \frac{(0-0)+(3-2)+(10-10)+(13-10)+(16-15)}{5}$$

$$= 1$$