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OS Mid

(1)

Question No#01:

(a) Yes it is a good idea that long term schedules selects the mix of I/O bound process and CPU bound process as if all process are I/O bond, the ready queue will almost be empty and short term scheduler will have very less job to do.

(b) The medium term scheduling technique is helpful in reducing the degree of multiprogramming as it pushes and swap out a process from main memory. It can also swap in process again when the process stops executing called suspending and helps in reducing the degree of multiprogramming.

(c) When time quantum (q) is very large, the round robin policy becomes a FCFS policy. When the time quantum (q) is very small, it can cause too many processes/context switches and it can reduce CPU effeciency.

(2)

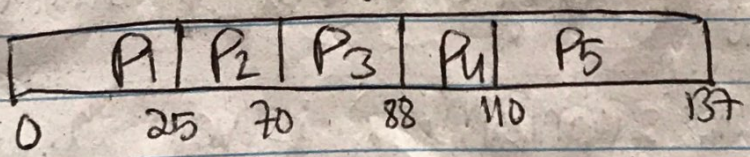
(d) When the process in time slice enter from running state, it will shift to waiting state therefore waiting state the process will enter from the to running state.

Question Number #04

(a)

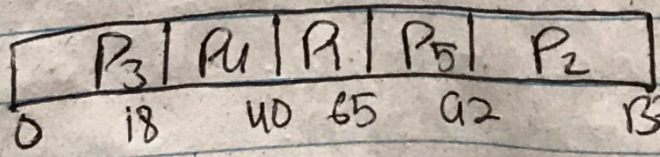
Process	Burst time
P1	25
P2	45
P3	18
P4	22
P5	27

* Gant Chart for FCFS:



Avarage waiting time = 0+25+70+88+110
= 58.6

Gant Chart for SJF:



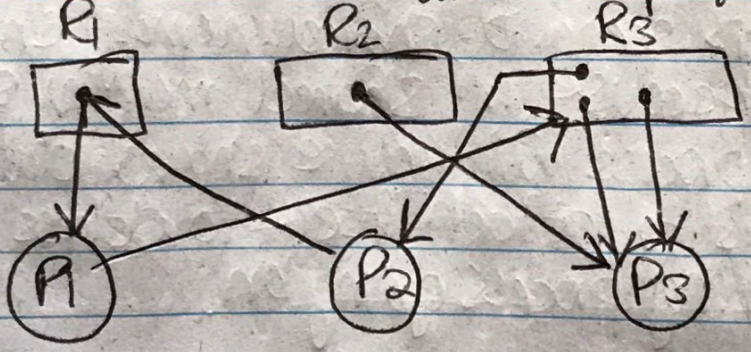
③

Average waiting time = 0+18+40+65
= 215/5
= 43

(b) SJF (Shortest Job first) gives the min average time for all 5 processes.

Question Number #03

(a) * Resource Allocation Graph:



Deadlock does not exist.

(b) Starvation is the worst amongst all of them as starvation or convoy effect comes after deadlock and high priority processes keep executing and low priority process gets blocked for indefinite time. But in deadlock they can wait temporarily.

(4)

Question Number #02

(a) because of the speed up rate of N-process will be more than it does not run fastes on a parallel collection of processors.

(b) Other process cannot take over and must be designed into the system if there are 20 processor and two processors fail.

(c) For this scenario, shared memory should be suitable because in shared memory system as other process will require shared data which has to attach itself to address space at initiating process going on.

(d) It occurs when application requests the help of OS as an interupt or system call occurs. Mode bit gets set to 1 in user mode then gets changed from 1 to 0 switching from user to kernel mode.

⑤

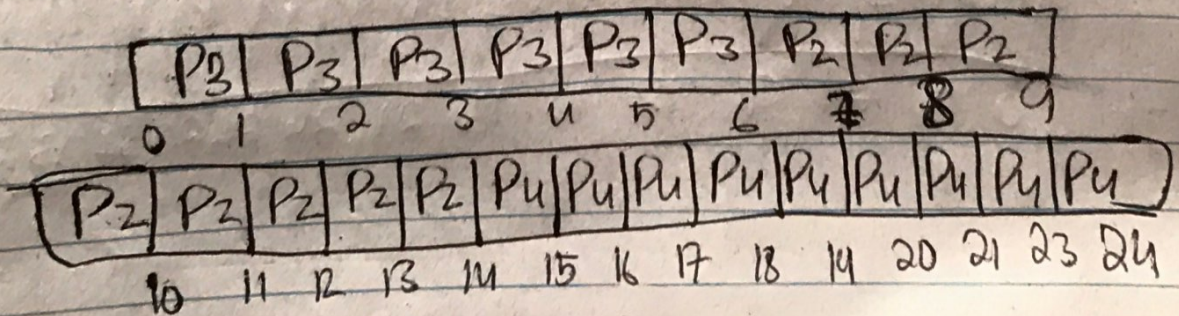
Question Number #05:

Processes	Allocation			Max need			Currently Available			Remaining need		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	3	4	3	10	8	6	15	14	3	7	4	3
P2	5	3	3	6	5	5	18	18	6	1	2	2
P3	6	3	5	12	3	5	23	21	9	6	0	0
P4	5	4	4	7	5	5	29	24	14	2	3	1
P5	3	3	5	8	6	6	34	28	18	5	3	1

Question Number #06:

Process	AT	BT
P1	3	12
P2	1	8
P3	0	6
P4	2	10

Grantt Chart:



(6)

P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1

25 26 27 28 29 30 31 32 33 34 35 36

P	AT	BT	CT	TAT	WT	RT
P1	3	12	36	33	21	21
P2	1	8	14	13	5	5
P3	0	6	6	6	0	0
P4	2	10	24	22	12	12

(b)

Process	AT	BT
P1	3	12
P2	1	8
P3	0	6
P4	2	10

P3	P1	P2	P4	P1	P2

0 3 6 9 2 15 18

P3	P2	P4	P1	P3	P2	P4	P1	P3	P4	P1	P1

0 3 6 9 12 15 18 21 24 26 29 32 33 36

(7)

Process	A.T	B.T	C.T	TAT	WT	RT
P1	3	12	36	33	21	6
P2	1	8	26	25	17	2
P3	0	6	15	15	9	0
P4	2	10	33	31	21	4

AWT (Avg waiting time) = (21+17+9+21)/4 = 17

ATAT = (33+25+15+31)/4 = 26

ART = (6+2+0+4)/4 = 3

Ans