Test - 1

Ans 1) Operating system is a interface which gives a communication link between user and computer.

Services of operating system

Programs		
System Call		

Command line	batch	GUI
Interface		

I/O operation	Protection & Security	Error detection	Communication	File management

Program Control		Service	Privacy	Accounting

Operating System

Hardware

* Services of operating system for user
  1. Interface
  2. I/O operations
  3. Error Detection
  4. Communication
  5. File management
  6. Program Control

Services for processor
1. Accounting
2. Privacy and security.
3. Protection

User

1. Interface → It consists of GUI that is graphical user interface which helps in interaction with the system, there is batch interface to do batching of the processes, which can be used for taking input. Command line interface is used such that what should be done if the key strokes are given to the system and what processes we need to execute.

2. I/O operations

It deals with the command we are giving which is stored in CPU memory from where it will go to RAM and their PC will be created which will take the instruction and then MAR will issue a read signal which then wait for some time then MDR will decodes & execute the and then ALU operations are done and after that again the PC is incremented for the next task and thus it is stored in memory & this is how we get output
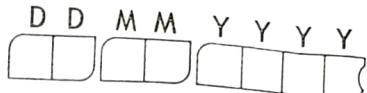
③ Error detection — Error should he detected to get bug free operations for which we should take the process with multiple checks and then debug it

④ Communication — Communication should be their within the system in order to get the files and do dependent tasks like importing files & extracting data

⑤ File management — Files management should be done which means keeping the file in such a order from where we can get the information whenever needed by fetching data. And then storing the data that is produce. Data base management system is really necessary in order to make use of the file clusters that we have in our system

⑥ Program Control — Program is executed for which some ~~are~~ ALU operations are done and for this control unit synchronizes the processes which helps in implementing the program effectively

⑦ Accounting — Account of the process should he maintained in order to know the CPU utilization

⑧ Privacy and Security — The files should not clash with each other and ~~som~~ one program should not interfere in other and this can be achieved by making the system more robust & powerful

⑨ Protection — Protection should be given so that no viruses will come & affect the program.

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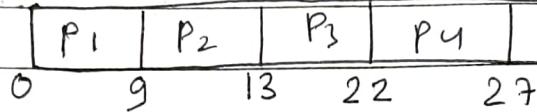
4(a) ECFS

$TAT = CT - AT$

$WT = TAT - BT$

P NO	AT	BT	Priority	CT	TAT	~~TAT~~ WT
P1	0	9	3	9	9	0
P2	1	4	2	13	12	8
P3	2	9	1	22	20	11
P4	3	5	4	27	24	~~19~~

Gyanttchart

| P1	P2	P3	P4	

0   9   13   22   27
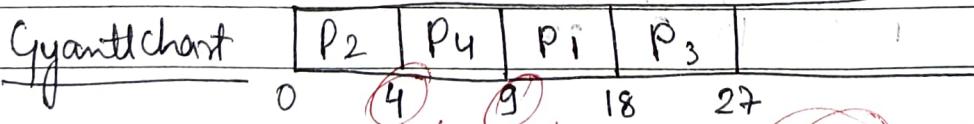
$$\text{Avg TAT} = \frac{9 + 12 + 20 + 24}{4} = 16.25 \text{ ms}$$

$$\text{Avg WT} = \frac{0 + 8 + 11 + 19}{4} = 9.5 \text{ ms}$$

SRTF

PNO	AT	BT	CT	TAT	WT	
P1	0	9	18	18	9	
P2	1	4	4	3	1	
P3	2	9	27	25	16	
P4	3	5	9	6	1	

Gyanttchart

P2	P4	P1	P3	

0   4   9   18   27

$$\text{Avg TAT} = \frac{18 + 3 + 25 + 6}{4} = 13 \text{ ms} \qquad 13.5$$

$$\text{Avg WT} = \frac{9 + 1 + 16 + 1}{4} = 6.75 \text{ ms}$$

TAT = CT ~ AT

WT = TAT ~ BT

RR (q = 2ms)

Process	AT	BT	CT	TAT	WT	
P1	0	9	26	26	17	1
P2	1	4	12	11	7	
P3	2	9	27	35	16	
P4	3	8	18	15	10	

P1

P2, P3

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

0   2   4   4   6   8   10   12   14   16   18   19   20   22   26   27

Avg TAT = 9.25 ms

Avg WT = 12.5 ms

Priority

P	Process	AT	BT	CT	TAT	WT	
3	P1	0	9	22	22	13	
2	P2	1	4	5	4	0	
1	P3	2	9	14	12	3	
4	P4	3	5	27	24	19	
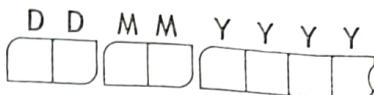
P1	P2	P3	P4	P4

0   1   5   14   22   27

Avg TAT = 15.5 ms

Avg WT = 8.75 ms
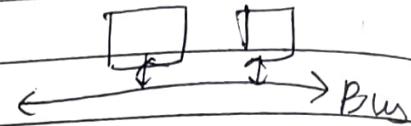
4(b) Process	Thread
1) It is the program in execution	1) It is the instance of program in execution
2) ~~If It can no~~ 2) Every process has its own memory allocated and it cannot use others	2) It uses same memory that is shared.
3) It is heavy weight model	3) It is light weight model
4) It has more resource in the process.	4) It has less resource
5) They are independent of each other	5) They are dependent on each other
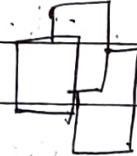
1 (b) Multiprocessor system

→ In multiprocessor system hardware systems ~~are~~ like processor, memory etc are virtualized with a bus structure
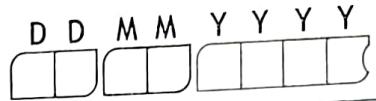
→ ~~It is fast~~   → CPU is utilized
→ ~~It has~~ less traffic
→ ~~Jobs~~   → Uses register
                → It is costly

Cluster System

→ In this softwares are cluster together in order to get the fruitful processing speed & utilization

→ ~~It is slower~~ → NO CPU
                → Uses threads
→ It has more ~~traffic~~ → It is cheaper
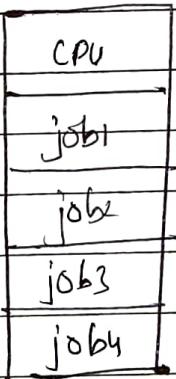
1(b)(ii) Multiprogramming

→ Its principle is CPU utilization since we know that CPU should never be kept idle and in ideal case we can utilize 40% to 90% of the memory

→ It is non preemptive

→ We divide the processes to execute and other process or jobs will wait till the previous one executes in order to execute

CPU
job1
job2
job3
job4

→ Slower because it waits for every process to execute

→ It is fo

Multitasking

→ It is preemptive

→ It works on threading model which means dependending on time & utilization of memory till will start working

→ It is used for increasing the response time since they are fast b/c they are not preemptive

Quiz

1) (b) create ✗

2) (a) when process is scheduled to run after some execution

4) (b) Program Counter

3) (b) communication b/w 2 processes

5) (b) 5