

Q5

1A) Operating system is the basis for computer hardware.
It acts as a intermediate between the computer hardware and the user.

2A) Examples of OS → Windows, iOS, macOS, ubuntu, Linux,
Examples of Mobile OS → Apple iOS, Android.

3A) Multitasking → It is when multiple jobs are executed by the CPU simultaneously by switching b/w them. ~~Suites~~ The user can interact with each prog while it is running.

Multiprogramming → When two or more programs reside in memory at same time, the processors ^{all} ~~shared~~ ^{ie} ~~the~~ is known as multiprogramming.

- 4A) 1) Monolithic Structure
2) Layered Structure
3) Microkernel structure
4) Modular Kernel.
5) Hybrid System

5A) Haiku, NetWare, NT Kernel.

6A) Disadvantage of Monolithic Structure & layered structure.

- Security

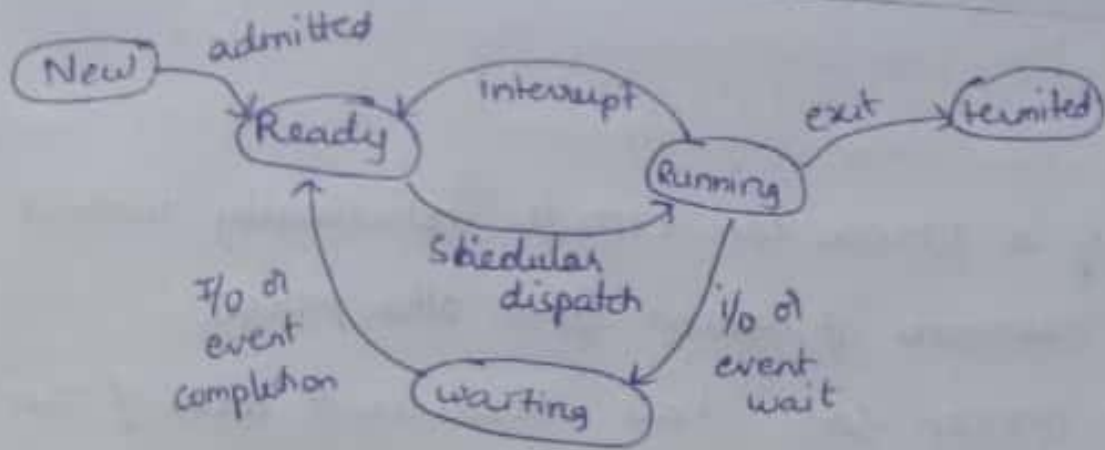
- Complex to design since effect in one layer effect the total structure.

7A) (C)

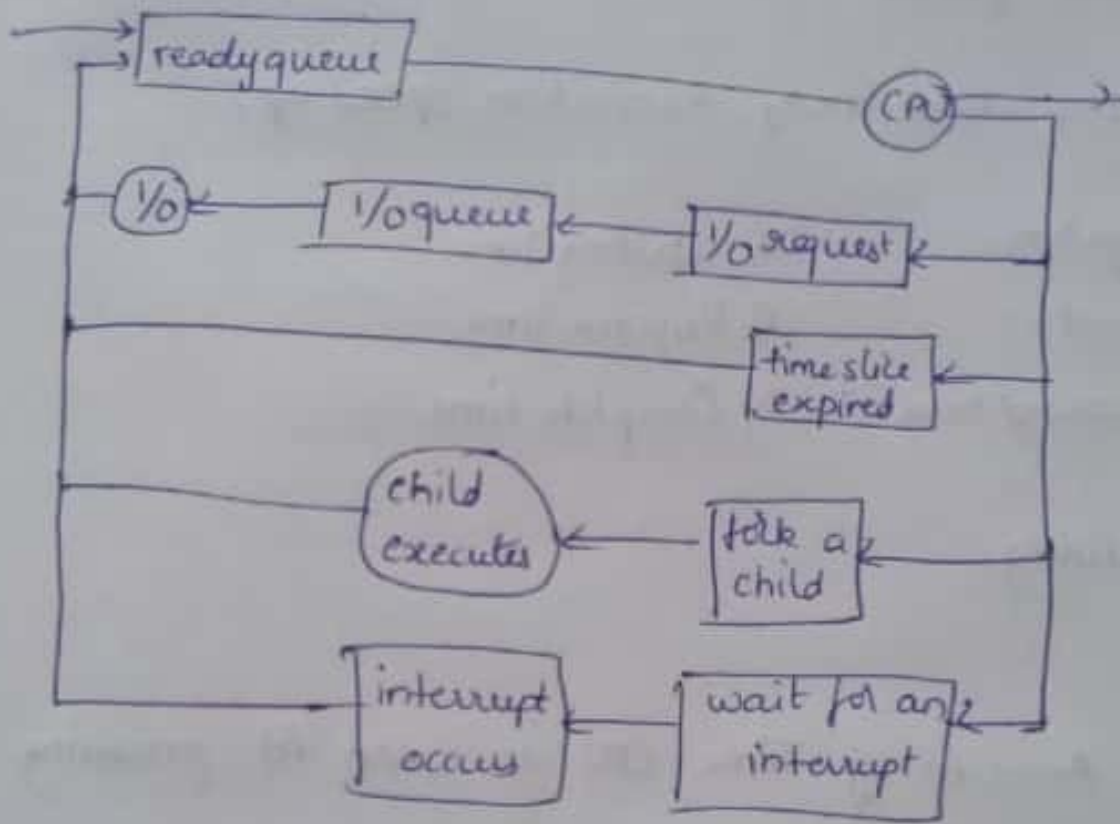
8A) Task controlling Block.

9A) Program counter is a register in computer process that contains the address of instruction being executed at current time.

10)



11A)



12A) Scheduler monitors the way of execution of a process get better throughput.

13a) Long term scheduler, selects processes from a created pool of process & loads into memory for execution.

Short term Scheduler, selects processes that are ready to execute & allocate CPU to one of them.

14a) CPU bound : If a job consists of no. of computations with less no. of I/O operations, then it is CPU bound.

I/O bound : If a job consists of more no. of I/O operations with less no. of CPU operations then I/O bound.

15) (a)

16a) Throughput

17a) Independent \rightarrow If a process can execute individually without sharing resources & doesn't effect other process.

Cooperating \rightarrow A process can share resources & data & can effect other process.

18a) 1) Data sharing, Modularity, Execution speed up,

19a) 1) CPU utilization

2) Throughput

3) Turn around time

4) Waiting Time

5) Response Time

6) Complete time

20a) Priority scheduling

21a) (d)

22a) Burst Time \rightarrow Amount of Time CPU is used for processing

Arrival Time - The time when process is placed in ready queue.

23a) TAT - Total amount of time spend by process from entering ready queue till completion of execution

WT \rightarrow The amount of time process waits for CPU to start execution.

24a) Primitive

\rightarrow Process are executed one after other based on time slice
or interrupts being generated which are forcibly stopped
& send unto ready queue

Non preemitive:

When process starts execution by CPU, it should get terminated or enters into waiting state for \forall operations

25a) (b)

26a) Each processor maintain its own private ready queue & they run self scheduling

Issues In SMP

- processor affinity
 - soft affinity
 - hard affinity
- load balancing
 - push migration
 - pull migration
- Multi-core processing
 - Course grained
 - Fine grained.

27a) Critical section:

let system have P_0, P_1, \dots, P_n processes.

The part of code or segment of code where we are modifying the shared information, is known as critical section.

28A) Turn \rightarrow It indicates whose turn is to access critical section.

Flag \rightarrow It is used to provide progress in critical section.

It is used to know which process is ready to enter into critical section.

29A) 1) Mutual Exclusion

2) Progress

3) Bounded Waiting

30A) If there are several no. of processes that manipulate or access same data, then the outcome of execution depends on particular order in which access takes place.