Part - B

1.0 Answer any eight of the following

1.1 It is a software that manages a computers, resources and allows us to interact with the computer

OR

It acts as a bridge a between the user and the hardware

1.2 * New
* Ready
* Run
* termination

1.3 The two types of semaphores

⟹ Binary semaphore
⟹ Counting semaphore.

1.4] The conditions that causes deadlock

→ Mutual exclusion

→ Hold and Wait

→ No preemption

1.5] Swapping: When RAM is limited the OS moves parts of inactive processes to disk storage and swaps them back when needed

1.6] Page fault occurs when a process generate a reference to a page that is not currently in physical memory

1.7] Single level directory structure is the simplest structure where every file is saved in one directory.

1.8] The seek time is the time taken by the disk arm to locate the desired track.

1.9 RTOS refers to real time operating systems.

1.10 A technique used by operating system to switch processes from a given state to another one for the execution.

2.0 <u>Answer any six of the following</u>

2.1 Distributed system is a network of interconnected computers or devices that work together to achieve a common goal

→ They have high performance

→ fault tolerance

→ Scalability

→ Ability to handle large amounts of data.

2.2] A phenomenon is computer system where there is excessive paging actively, causing the system to spend more time swapping page.

To increase prevent thrashing.

→ page replacement

→ demand paging

→ Get a bigger RAM

→ Optimize.

2.3] Round robin allocate a fixed time slice to each process in cyclic order. If a process is not completed within the time the next task is executed. It proceeds in a cyclic manner

2.4] Internal fragmentation occurs when memory is distributed into fixed sized block. If the memory allocated to process is large than the memory demanded then the difference between allocated and demanded memory is called internal fragmentation

2.5] FIFO replacement algorithm replaces the oldest page in memory when o page fault occurs

2.6] Attributes of a file are

→ Size

→ Name

→ Type

→ location

→ Time and date.

2.7 Characteristics of RTOS are

→ Small

→ fast

→ responsive

→ deterministic

2.8 FCFS is a simple disk scheduling algorithm where the requests are serviced in the order they arrive in the queue. It is easy to implement but can lead to convoy effect.

3.0 <u>Answer any four of the following</u>

3.1 Functions of OS

→ acts as a bridge between software and hardware.

→ Process management

→ Memory management

→ file management

→ Device management

→ User interface

→ Security

3.3 Paging is a memory management technique used by as to overcome some of the challenges associated with contiguous allocation. The physical memory is divided into fixed size block called pages and the logical memory is divided into blocks of the same size called frames.

3.4 Techniques used for implementation of free space

→ Bitmaps

→ linked list

→ Grouping

→ Take away

→

SJF : It schedules process based on CPU burst time. The process with the shortest burst time is executed first. It is used to minimise the waiting time and turn around time for process.

Priority scheduling : It assigns a priority value to each process and processes with higher priority values is are executed first. It is used to execute the program which are more important than the other programs,

Hard Real time

In this real time system the timing constraints are extremely strict and failure to meet the deadline can have serious consequences. The file size is small or medium. The response time is us ee milliseconds. It is restrictive. Eg: Air traffic control medical system

Soft real time

In this time system. the size of data file is large. He respons time ae is higher It is less restrictive. He s system safety is not critical