



Q:-1 (A)

- 2013, 2014, 2015
- Q1) What is OS? 2013, 2014, 2015
- To India go with 2013, 2014, 2015

→ An OS is a set of programs that provide platform to execute an application software.

2013, 2015, 2016

2) Kernel :- A kernel is a central component

of the OS. It is the part of the OS that manages memory and processes.

- It acts as an interface between user applications & hardware.

2013

3) Spooling :- When the job is executed, the OS satisfies its request for resources needed by reading from memory and the disk. 2013, 2014, 2015

Spooling is a process of reading data from memory and writing it to disk.

It is used to increase the efficiency of the system.

4) Multiprogramming :- Programs must be run sequentially, or on a First-Come, First-Serve basis.

2024

(A) I-19

5) System call:- A system call is the programmatic way in which a computer program requests a service from the kernel of the operating system.

2024, 2025, 2026

26. 3. 2025, 2025

6) Buffering:- It is a temporary storage area, used to hold data while it is being moved from one place to another.

2024, 2023 (Q. 3(A)), 2026
(ii)

7) Multithreading:-

It is the ability of a program or an OS process to manage more than one user at a time & to even manage multiple requests by the same user without having it multiple copies.

This is done using thread scheduling algorithm in a single thread.

8) DIFFERENCE BETWEEN CUI & GUI? 2014, 2015



CUI

= Command Line Interface

- It is stand for command line user interface.
- It is stand for graphical user interface.
- CUI was most common interface types associated with old computers.
- GUI was most common interface types associated with modern computers.

9) Batch Processing: - Early computers were physically large machine which is run from console.

2014
↓

• If user want to print a document then he has to type printing code to tell printer what to do.

(10) List out the functions of OS :- (2015)

→

- 1) Booting
- 2) Memory management
- 3) Loading & Execution
- 4) Data security
- 5) Disk Management
- 6) Process
- 7) Device Controlling
- 8) Printing
- 9) Providing interface

11) client-server model:-

→ Each server runs in a user mode, provides services to the requested client.

12) Task of OS:- (2016)

→ In computer programming, a task is a basic unit of programming that an operating system controls.

Q:-2 (A)

2013, 2015, 2016 \rightarrow ~~Q.1~~ Q.2

~~Q.1~~ Q.2 \rightarrow ~~Q.1~~ Q.2

1) Context switch: - It is the switching of the CPU from one process to another.

2) Which process scheduling algorithm suffers from starvation?

\rightarrow Priority based scheduling

Starvation - It is a resource management problem where a process does not get the resources it needs for a long time because the resource is being allocated to other processes.

3) Throughput: - The number of processes that are completed in a particular time period is known as throughput.

2023

(A.Y.S-19)

4) Turnaround time :- The time duration from the time of submission to completion of a process i.e. the time taken by the system to execute a process.

2023, 2016

5) Response & Response Time :-

-> The time from submission of a request until the first response is issued.

2014

prioritization & timing

6) Starvation :- we can use a priority system, & increase the priority of a process every time its resources get preempted.

2014, 2015

Self scheduling priority

7) Waiting Time - Waiting time is the sum of the periods spent waiting in ready queue.

2014

Total waiting time = $\sum (W_i \times N_i)$

8) Round Robin algorithm is suitable for time-slicing.

2015, 2016

9) Process :- A process is the unit of work in modern time-slicing system.

2025
↓

(A) E-19

10) Ready Queue:- It is queue of all processes that are waiting to be scheduled on a core/CPU.

2025
↓
11) CPU burst :- A process can use the CPU several times before complete the job.. (looping job)

P:-3(A)

2022-23, 10 Jan 2016
2013, 2016
2013, 2016

1) What is semaphore? Give types of it?

→ A Semaphore is an integer variable that is manipulated automatically by using two operations known as \downarrow (For Wait) & \uparrow (For signal).

- These are 4 types of Semaphore:-

- 1) Binary Semaphore
- 2) Counting "
- 3) Usage
- 4) Implementation

2) Resource Allocation graph:- 2013

→ An $n \times m$ matrix defines the number of resources of each type currently allocated to each process.

2013, 2015, 2016
↓

3) Multitasking:- It is an OS is allowing a user to perform more than one computer task at a time.

2024, 2026

4) Deadlock:- A process is requesting for resources.

2015

5) Thread:- A thread is a single sequence stream within in a process.

2015

6) Critical section:- It is a piece of code that accesses a shared resources that must not be accessed at same time by more than one thread of execution.

2015

7) Thread synchronization:- Maintaining data consistency requires mechanisms to ensure the execution of competing processes.

2024, 2025

8) Cause for deadlock:-

- - 1) Mutual exclusion
 - 2) Hold & Wait
 - 3) No Preemption
 - 4) Circular wait

2014

a) Critical Section Problem - A Simple Form

→

1) Mutual Exclusion

2) Progress

3) Bounded waiting

to go into the critical section

↳ each process can have

at least one job in the section

and wait jobs in the section

Q:-4 (A)

2023, 2025

1) What is MMU? 2013, 2016, 2015

2013, 2016, 2015

→ ~~Memory Management Unit.~~

It is a computer hardware component responsible for handling requests to memory requested by the CPU.

2) Paging:- logical memory is broken into blocks of the same size called Pages.

3) Demand Paging:- In OS, demand Paging is a method of virtual memory management.

4) ATU:- Address Translation Unit

5) Thrashing:- In a virtual storage system thrashing is a condition in which excessive paging operations are taking place.

2014, 2015

(H) 11-5

- 6) Swapping :- A process can be swapped out temporarily from memory & stored into secondary storage & then back into memory for continued execution.

2014, 2015, 2016

- 7) Page Fault :- An interrupt that occurs when a program requests data that is not currently in real memory.

• This started in 1960s by Intel (S. Manne 1951) giving birth to 2nd gen. C.P.U's