**Q. Introduction to the operating system with key functions.**

**A.** An **Operating System (OS)** is the most essential software that acts as a bridge between the user and the computer hardware. It manages all the hardware and software on a computer and allows other programs to run.  
**Key Functions of an Operating System**

* Process Management
* Memory Management
* File System Management
* Device Management
* Security and Access Control
* User Interface

**Q. Introduction to the Unix/Linux (Architecture)**

**A**. **Unix/Linux** are powerful, open-source operating systems known for their stability, security, and flexibility. They're widely used in servers, development environments, and even mobile systems (like Android).

The **architecture of Unix/Linux** is well-structured and modular, making it easy to manage and extend. It follows a **layered design**, where each layer has its own job and communicates with the others.

**Components of Unix/Linux Architecture**

* Kernel
* Shell
* System Libraries
* System Utilities and Applications

**Q. Concept of Shell.**

**A**. a shell is a program that takes commands from the user and tells the operating system to execute them. A shell –

* **Accepts your commands**
* **Interprets them**
* **Passes them to the kernel**
* **Displays the output back to you**

One can also write shell scripts, which are files containing a list of commands. This helps automate tasks like backups, installations, and more.

**Q. Types of shells**

**A**.There are different shells –

* Bourne Shell : The original Unix shell
* Bourne Again Shell : Most common shell on Linux
* Korn Shell : Advanced scripting features
* C Shell : C-like syntax

**Q**. **Command structure**

**A**. In Unix/Linux, commands follow a specific structure. When you type something into the terminal, the system needs to understand exactly what to do, how to do it, and where to do it. That’s why the structure of a command matters. The command structure in Linux is simple and logical.