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Home Task for Module-3: Networking and Data Communication [ICT-107]

**1. What is a subnet mask?**

A subnet mask is a number that defines a range of IP addresses available within a network. A single subnet mask limits the number of valid IPs for a specific network. Multiple subnet masks can organize a single network into smaller networks.

For example, a subnet mask for a Class C IP address is: 255.255.255.0. Here, the first three sections are full (255 out of 255), that is IP addresses of devices within the subnet mask must be identical in the first three sections. The last section of each computer's IP address can be anything from 0 to 255.

**2. What is OSI, and what role does it play in computer networks?**

OSI means Open Systems Interconnection. It was developed by the **International Organization of Standardization**, in 1984. It is a 7 layers architecture with each layer having specific functionality to perform. All these 7 layers work collaboratively to transmit the data from one person to another across the globe.

The OSI model characterizes computing functions into a universal set of rules and requirements in order to support interoperability between different products and software. It is also used for making users understand the concept of networking. There are many background actions which take place when a message travels from sender to receiver.

**3. What are the important differences between MAC address and IP address?**

MAC Address and IP Address are both used to uniquely define a device on the internet. NIC Card's Manufacturer provides the MAC Address, on the other hand Internet Service Provider provides IP Address.

The main difference between MAC and IP address is that MAC Address is used to ensure the physical address of a computer with the combined six-byte hexadecimal address. It uniquely identifies the devices on network. While IP addresses are used to uniquely identify the connection of a network with that device, take part in a network with the combined of either four-byte (IPv4) or eight-byte (IPv6) addresses.