Q1.  
Define Simplex, Duplex and Half Duplex. Give at least one example to explain  
these terms.

**Ans.   
Simplex** – is a one way communication channel where only sender sends the signals. One directional.  
e.g. Radio, broadcasting channels tv/ radio signals

**Duplex** – is a two way communication channel where sender and receiver both can communicate. Both ways/ bi-directional at the same time.  
e.g. Phone

**Half Duplex** - is a two communication but only one can use the channel at a time. Only one party can use the communication channel at a time.  
e.g. Walkie-talkie

Q2.  
What are the Building Blocks of a Telecommunication System? Provide one  
line explanation of each block.  
**Ans.** Telecommunication is transmission of information from Source to destination over a medium it could be wire, router, other network equipment.   
**Building Blocks of Telecommunication Systems –**

1. **Source/ Sender-** Human / Machine / Computer

Source usually requests to send information over the medium or channel. They have to initiate the request. The way of communication would be Analog or Digital signals.   
e.g. Speech, Music, Text, Movie

1. **Transmitting medium-**
   1. **Input Transducer –** It converts the physical quantity like pressure, sound waves, temperature or brightness into electric signal, voltage or current.

e.g. Microphone, video camera

* 1. **Transmitter –** It couples msg to the channel or medium. It helps in modulation or encoding of message into Amplitude Modulation, Phase Modulation, or Frequency Modulation
  2. **Channel –** It is the physical medium over which the message is carried or signal is passed. It can also introduce losses and distortion / noise interference  
     e.g. Wireless – Radio Wave, laser beam  
     Wireline – Coaxial cable, fiber optic cable
  3. **Receiver –** Receives signal from the channel, decodes it extracts the message and reconstruct the weakened signal through amplification, demodulation and filtering
  4. **Output Transducer –** It converts electrical signal to the form acceptable at receiving end.   
     e.g. Loudspeaker, computer systems

1. **Destination/ Receiver-** It is the destination or the end of the signal/ information meant to pass to.

Q3.  
What are the Primary Reasons for Growth of Digital Communication? Give at least 6 reasons  
**Ans. Primary reasons for Growth of Digital Communication --**

* Proliferation of Computers – advancement in computer and necessity in digital transmissions have increased the growth of digital communication for internet access, file media transfer
* Reduced noise or interference and increase in reliability of data transmission
* Error Detection & Correction - a packet transmitted with error code bits helps in efficient data transmission to other end
* Digital Integrated Circuits – smaller in size and faster in processing the data
* Easy to Secure – encryption and decryption techniques and improved ways maintains the reliability of use
* Easy to Save – Digital data can be saved and retrieved easily