1. Elaborate the process & elements of communication in detail through suitable examples?

Ans:- Communication means sharing of information. Data communication is a technology which is used to transfer data from a sender machine to receiver machine. The shared information (message) can be in the form of text, images, audio, video or a good mix of some of them all.

INTRODUCTION TO DATA COMMUNICATIONS

These messages are encoded in to the electromagnetic medium as shown in the following figure.

Data communication System

The purpose of a DCS is to transmit the message signal from a source to a destination. Following figure is a block diagram of a communication system. This system consists three basic parts: transmitter, channel, and receiver.

Effectiveness of a data communication system

The effectiveness of a data communication system depends on following four fundamental characteristics:

DELIVERY: to the correct and intended destination.

ACCURACY: unaltered in transmission system.

TIMELINESS: in a timely manner.

JITTER: variation in the packet arrival time.

Components of data communication System (DCS)

A DCS has 5 components which are given as and used as given in the following figure.

1. Massage

2. Sender

3. Receiver

4. Transmission Medium

5. Protocol

Representation of massage in DCS

1. Message can be represented in DCS as:

1. Text representation

2. Numbers representation

3. Image representation

4. Audio representation

5. Video representation

Representation of message in text

1. Text is representation as a bit pattern, a sequence of bits 0’s and 1’s.

2. Different sets of patterns have been designed representation text symbols.

3. Each set is called a code, and the process of representation symbols s called coding.

4. Today, the prevalent coding system is called unicod, which user 32 bits to representation a symbols or character used in any language in the world.

5. ASCII now constitutes the first 127 characters in Unicode and, is also referred to as basic Latin.

Representation of message in Audio numbers

1. Numbers are also representation by bit patterns.

2. Apart from ASCII, BCD is also used to representation number

3. The number is directly converted to a BCD to simplify mathematical operations.

Representation of using Audio and video

1. Audio Representation

- Audio refers to the recoding or broadcasting of sound or music.

- Audio is different from text, numbers, or images.

-it is continues, not discrete. Even when we use a microphone to change voice or music to an electric signal create a continuous signal.

2. Video representation

- Video refers to the recoding or broadcasting of a picture or movie.

-Video can either be produced as a continuous entity (e.g. by a TV camera), or it can be a combination of images, each a discrete entity, arranged to convey the idea of motion.

Modes of data communication used in DCS

1. Communication between two devices can be one of following 3 modes:

-Simplex, half-duplex communication