Computer Network

Attempt any three of the following.

a) Explain basic communication system with black diagram

-> The block diagram of the simplex possible communication system is as shown in fig. 1.2.1

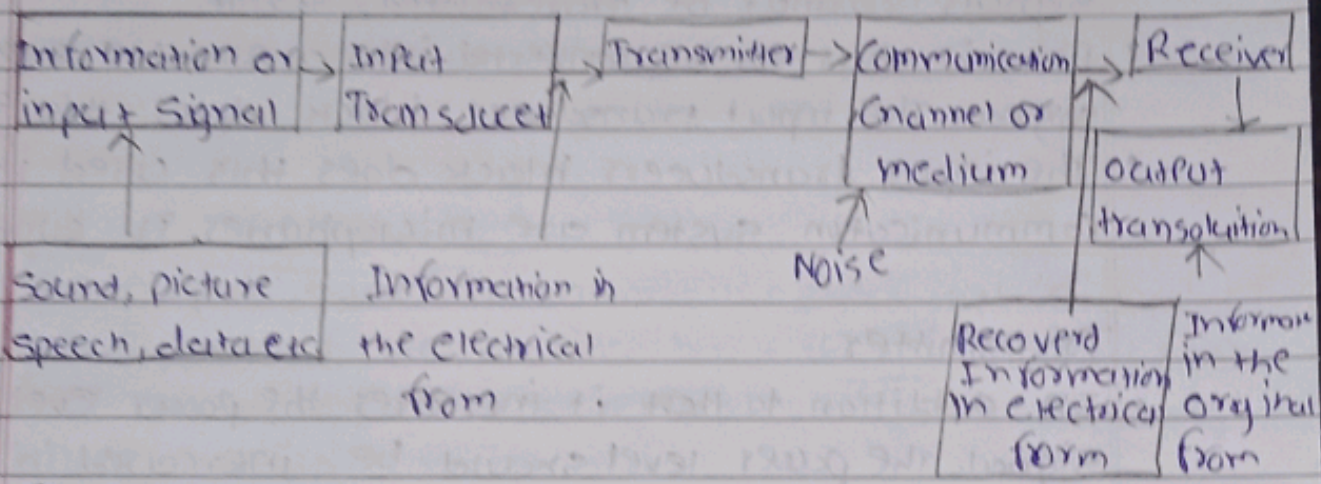

Fig. 1.2.1 :- Block diagram of the basic communication system.

- As seen from the fig. 1.2.1 the elements of a basic communication system are transmitter, a communication medium (channel) and the receiver.
- When the transmitted signal is travelling from the transmitter to the receiver over a communication channel nois gets added to it.
- The Elements of basic communication system are as follows

Information or input signal.

- The communication system have been developed for communicating using information from one node to the other.

- This information can be in the form of a sound signal like speech or music, or it can be in the form of pictures (TV signals) or it can be data information coming from a computer.

Input transducer :-

- The information in the form of sound, picture or data signals cannot be transmitted as it.
- First it has to be converted into a suitable Electrical signal. The input transducer block does this job.
- The input transducers block does this used in the communication system are microphones, TV comen etc.

Transmitter :-

- In addition to that it increases the power level of the signal. The power level should be increased in order to

Communication channel or medium :-

- The communication channel is the both used for transmiss of electronic singal from one place to the other. The communication medium can be conducting wires, cables, optical fibre or free space, Depending on the type of communication medium, two types of communicatio or system will exist. They are

1) Wired communication or Line communication.
2) Wireless communication or Radio communication.

NOISE :-

- Noise is an unwanted electrical signal which gets added to the transmitted signal when it is travelling towards the receiver.

- The man made noise includes the noise produced by electrical ignation systems of the automobiles, welding machines, Electric motor etc.

Receiver:-

- The process of reception is exactly the opposite process of transmission. The received signal is accomplished, demodulated and converted into a suitable form.
- The receiver consists of electronic circuits like mixer, oscillator, elector, amplisier etc.

Output TRANSDUCERS:-

- The output tranducer converts the electrical signal at the output of the receiver back to the original form i.e:- sound or TV pictures, loud speakers, picture, tubes, Computer maintor etc.

b) Discuss parallel transmission and serial transmission.

→ Parallel transmission.

- In parallel transmission of data, all the bits of a byte are transmitted simultaneously on seperate wiers as shown in fig 3.2.21
- This type of transmission requires multiple wires for interconnecting the two devices.
- Parallel transmission is possible practically only if the two devices are close to each other due to the length and the number of wires required.
- e.g:- parallel transmission takes between a Computer and it's printer.

Preferred for long stance not communication. This is advantage of serial transmission over parallel transmission.

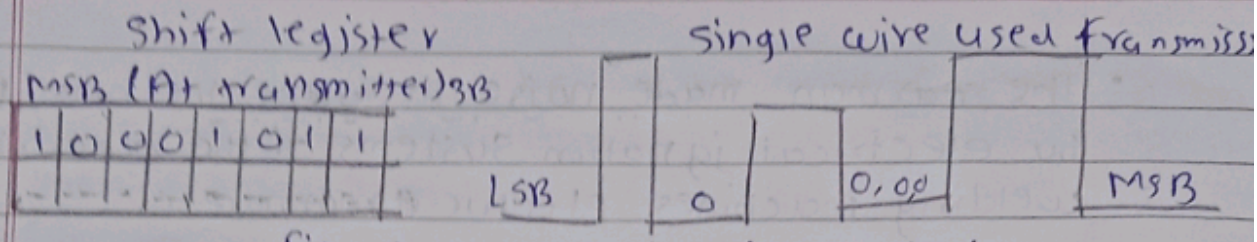

fig:- 3.23.1:- serial transmission.

e] List and Explain the function of each layer of ISO's OSI modal with next diagram.

→ fig 1.19.1 show the sevet layer architetute of ISO-reference model. It defines seven level on layers in a complete communication system. The layer ~~tai~~s physical l and highest one is called as the application layer.

USES.

Layer 7	Application layer.
Layer 6	presentation layer.
Layer 5	Seassion layer.
Layer 4	Transport layer.
Layer 3	~~De~~ Network layer.
Layer 2	physical layer.
Layer 1	Deraksom layer.
Layer 0	Transmission Layer. medium.

fig:- 1.19.12:- A serve layer. ISO-OSI reference

- This modal is based on a proposed by the International standards Organization (ISO).
- It is called as ISO-OSI (often system Interconnection) refetence model because it is designed to deal with open system. The system which are often for Communi with other system.
- fig 3.22.1 shows the parallel transmission of ar 8-bit digital data.
- This will require eight wires for conection betweer a transmitter and a receiver.

- With increase in the number of receivers, the number of wires will increase to an unmanageable number.

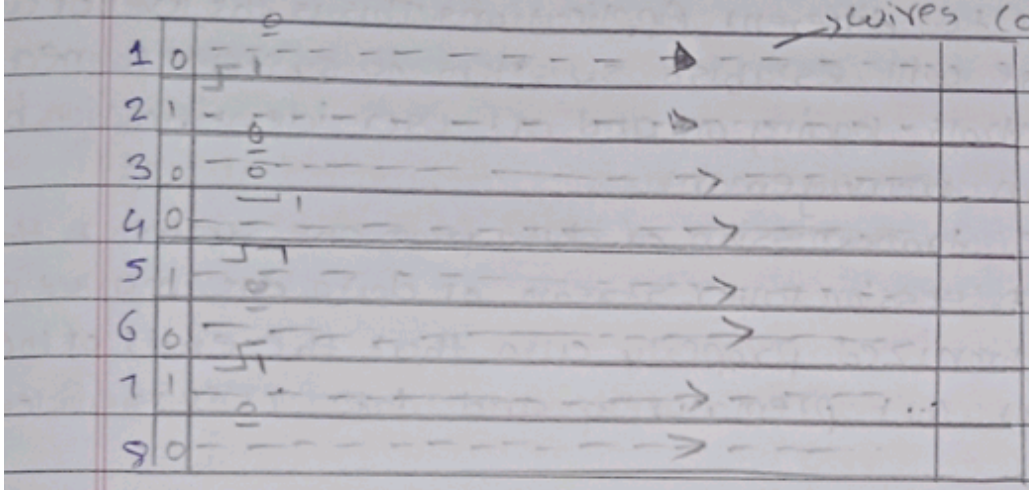

fig:- 3.22.1 :- Parallel transmission of data.

Serial Transmission:-

- In serial transmission the bit's of a bytes are serially transmitted one by one as shown in fig. 3:3.1
- The byte to be transmitted is first stored in a shift register. Then these bits are shifted from MSB to LSB bit by bit in synchronization with the clock. Bits are shifted right [see fig. 3.23.1] by one position for clock cycle.
- The bit which folis out of the shift register is transmitted. Hence LSB is transmitted first and MSB is the last bit getting transmitted.
- For serial transmission only one wire is needed between the transmitter and the receiver. Hence serial transmission is
- Transport layer guarantees transmission of data from one end to the other.
- it breaks the data groups in smaller units so that. They are handled more cofficiently by the network layer.

Layer 5:- The Session Layer.

- This layer manages and synthronizer conversation between two different Applications. This is the level of which the use will establish system to system connection
- It controls logging on and off user identification, bill session management.
- In the transmission of data from one system to the other at session layer stream of data are marked an resynchronized properly also that the ends of mess are not cut prematurely and data loess is avided.

- Layer 6:- The Presentation Layer.
- The presentation layer makes it sure that the in is delivered in such a form that the receiving system understand and use it.
- The form and syntax (language) of the two communica systems can be different ex. one system is using th ASCII code for file transfer and the other one uses IBM's EBCDIC.

Layer 7:- Application Layer.

Application layer is at the top of all as shown in fig 1.19.2. provides different serviced such as manipulation of Information in various ways, s retrieving the files of information, distributir the result etc. to the user who is sitting above t layer.

The functions such as Login, or password check are also performed by the application layer.

d) Differentiate between asynchronous transmission and synchronous transmission.

Asynchronous transmission	Synchronous tramission.
① In Asynchronous transmission data is sent in form of bytes or characters.	In synchronous tramission transmission, data is sent in form of blocks of forms.
② Asynchrobaous transmissionos slow.	② Synchronous tramission is fast.
③ In Asynchhronous transmission the time imtervel of transmission is not constant, it is random.	③ In synchronous transmission. the time interval of transmission is constant.
④ Here, users do not have to wait for the completion of transmission in order to get a response from the server.	④ In this transmission users have to wait till the transmission is complete before getting a resp back form the server.
⑤ In Asynctronous transmission, there is present a gap betwee data.	⑤ In synchronous transmission there is no gap present bet data.
⑥ While in Asynchronous transmissi the transmission line remains. empty during a gap In character transmission.	⑥ Efficient use of transmissio on lines is done in synchron transmission.

1) The Half and stop bits are used in transmitting data that imposses extra overhead.	The start and stop bits are not used in transmitting data.
2) Asynchronous transmission does not used synchronized clocks as parity bit as used in this transmission for information of new bytes.	Synchronous transmission needs precisely synchronizer clocks for the information of new bytes.