

Qno-3	Difference between Microprocessor and Microcontroller
<p>1) Difference between Microprocessor</p> <ol style="list-style-type: none"> 1) It is a dependent unit. It requires a system of chip like program, data interrupt controller for functioning 2) It doesn't contain built-in I/O ports 3) It is designed for high end market where performance is important 4) It is general purpose for application and design 5) It does not have power saving features 	<p>Microcontroller</p> <ol style="list-style-type: none"> 1) It is self contained and does not require interrupt controller for processing 2) It contains multiple I/O ports 3) It is designed for embedded systems where performance is not critical 4) It is application oriented and domain specific. 5) It has many power saving features
<p>RISC (Reduced Instruction specific computing)</p> <ol style="list-style-type: none"> 1) It has less number of instructions 2) Instruction pipelining and increased execution speed 3) Orthogonal instructions 	<p>CISC (Complex Instruction specific computing)</p> <ol style="list-style-type: none"> 1) It has greater number of instructions 2) No instruction pipelining feature. 3) Non orthogonal instructions

RISC

- 4) operations are performed on registers only
- 5) A lot of registers are available
- 6) Single, one size length instructions
- 7) silicon usage is low

CISC

- 4) operations are performed on registers and memory.
- 5) limited registers are available
- 6) variable length instructions
- 7) silicon usage is high

Qno 5) The applications of an embedded systems are:

- 1) Consumer Electronics:
camcords, cameras
- 2) Household appliances:
TV, DVD player,
Fridge, washing machine,
Microwave oven

3) Home automation and security:
Air conditioners, CCTV,
intruder detection alarm
Fire alarm.

4) Telecom:
cellular telephone, telephone switches
handset etc.

5) computer peripherals:-
printer, scanners and fax machine

6) Health care:
EEG and ECG machines

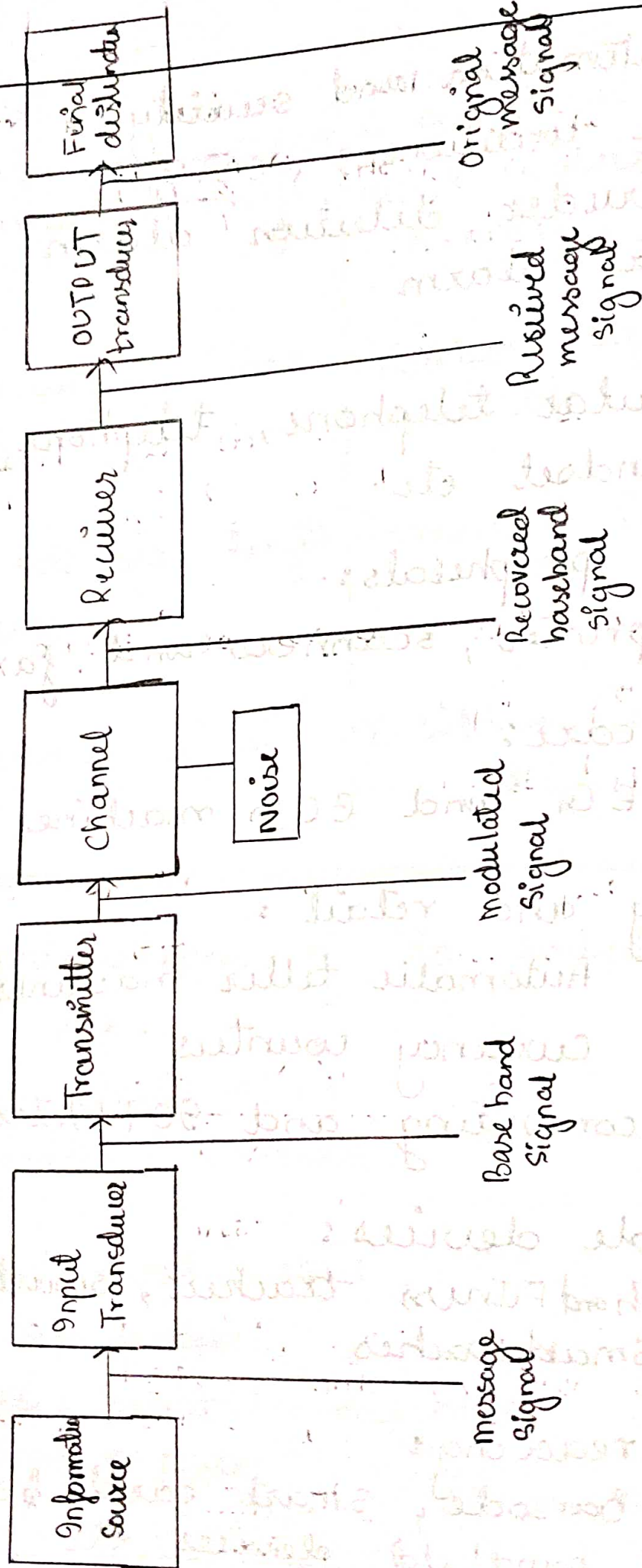
7) Banking and retail:
Automatic teller machines (ATM)
currency counters

8) cloud computing and IoT (Internet of things)

9) wearable devices:
health and fitness trackers, smartphones,
smart watches.

10) card reading:
Barcode, smart card reading
handheld devices etc.

Qno. 4)



→ In a communication system, a message is transmitted from information source to final destination.

Input Transducer:-

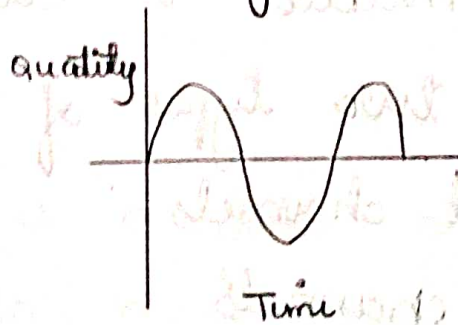
→ A transducer is a device that converts non-electric signal to electric signal and vice-versa.

There are two types of signals

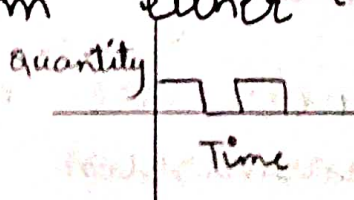
I) Analog signal

II) Digital signal

• Analog signal: It is continuous signals in a sinusoidal waveforms

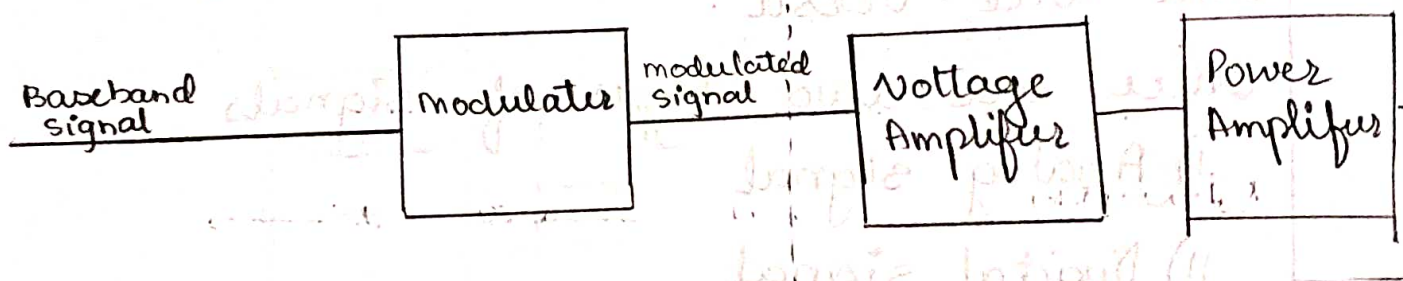


• Digital signal: The signal increments at discrete value. The output is given in binary form either 'high' or 'low'



eg: electric signal

→ Transmitter :-
It is a collection of electronic devices that converts electric signal in a form that it can be transmitted.
The output signal of input transducer is input of transmitter



→ channel :- The medium in which signals are transmitted is called as channel.

There are two types of channels

1) Hardwired channels

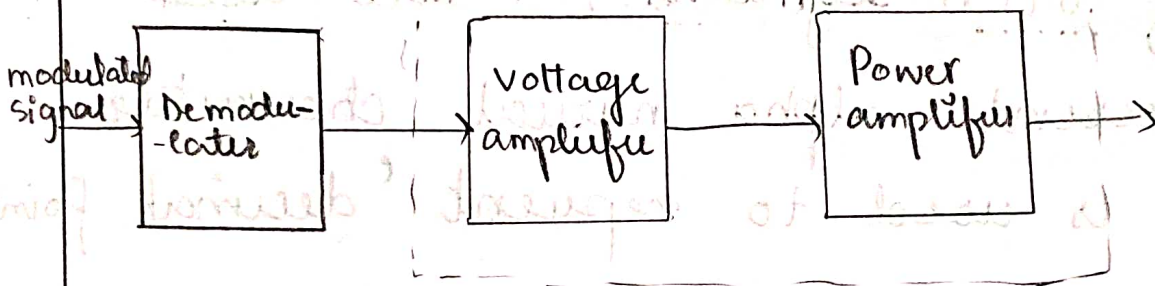
2) Softwired channels

- Hardwired channels are man-made structures used for transmission

- Softwired channels are natural structures used for transmission eg: sea water

→ Noise : Noise is the most undesirable part of the communication system. It distorts the original message signal.

→ Receiver :- It is a collection of electronic devices that convert signal to a form that can be understood at final destination.



Q no 6 Write a note on

1) Actuator :-

An Actuator is a form of transducer which converts mechanical and electrical signal into a physical action such as motion.

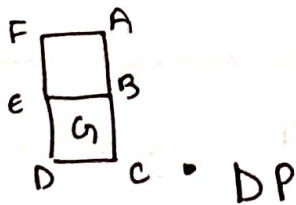
An actuator is an output device

ii) 7-Segment LED display

A 7-segment LED display is an output device used for representing alpha-numerical characters.

It consists of 8 LED segments arranged in a special form.

Out of 8 LED segments, 7 are used to represent alpha numerical characters and 1 is used to represent 'decimal point'.



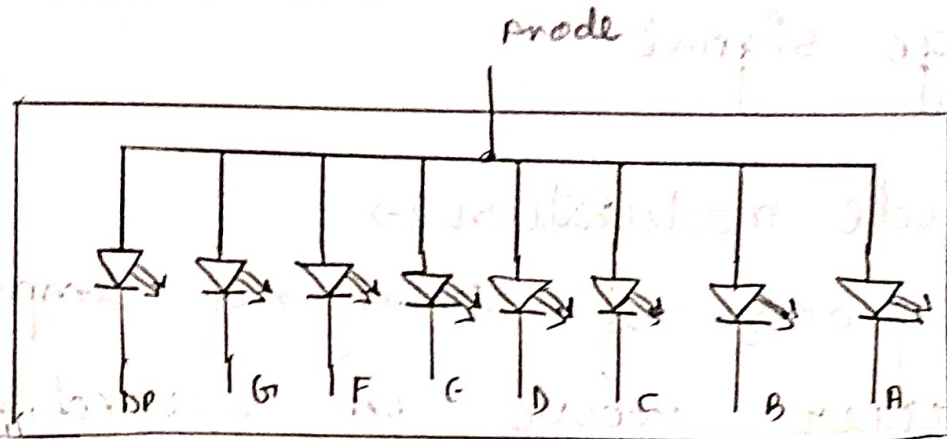
Here A - G LED segments are alpha numerical characters and DP is the decimal point.

7-segment LED display is classified

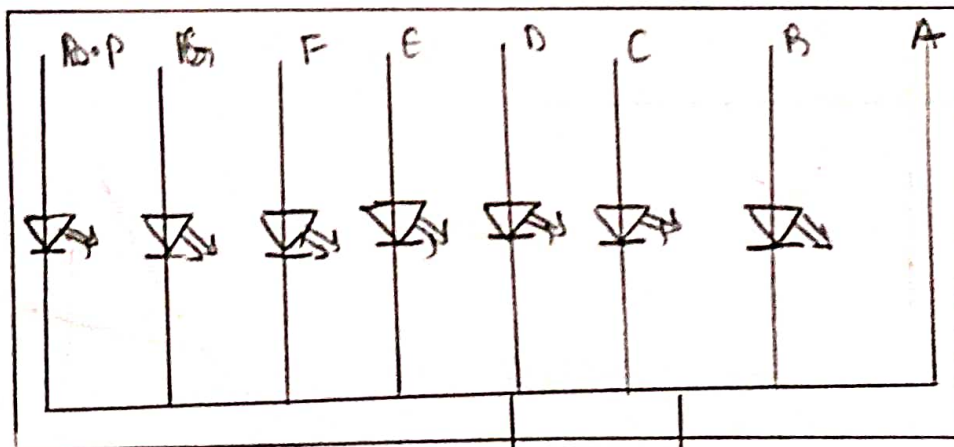
- as
- 1) common anode
 - 2) common cathode

LED

In common anode, the LED segments are all combined commonly where as in common cathode, all the LED segments are combined to one cathode line.



Common Anode Configuration



Common cathode configuration

cathode line

PTO →