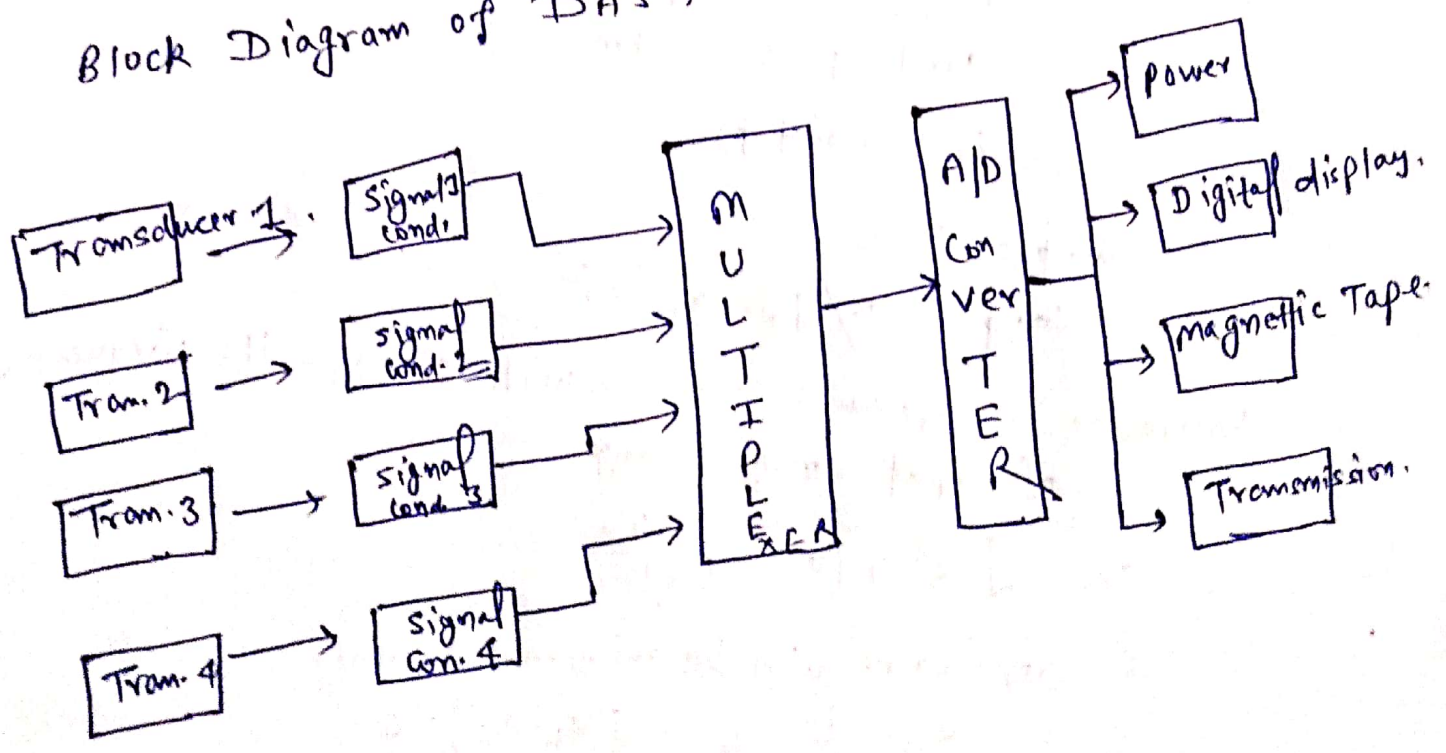


* **DAS (Data Acquisition System)**:- Data acquisition system is an ^{collecting} information system that collects, stores and distributes information.

- If it is used in industrial and commercial electronics and environmental and scientific equipment to capture electrical signals or environmental conditions in a computer device.
- include different tools and technologies that are designed to accumulate data.
- Data acquisition system consists of -
 - sensor
 - signal conditioning.
 - Data Conversion.
 - Data processing.
 - multiplexing,
 - Data Handling.
 - Associated Transmission storage and Display devices

Block Diagram of DAS,



* Transducer: — used to convert the physical quantity coming from the field into electrical signals.
 or
 it is used to measure directly the electrical quantities.
 Voltage, current.

* signal conditioning unit: — output signals of transducers are very weak signals which can not be used for future processing.

* To make the signal strong, various signal conditioning are used.

conditioning:
 ↳ Amplifiers.

↳ Filters.

↳ modifiers.

Multiplexer: — accept multiple analog inputs and provide a single output signal according to the requirement.

A/D Converter — convert analog data into digital data.

→ easy processing.

→ easy transmission.

→ Digital display and storage.

Recorders and display Devices: —

↳ Data is displayed in suitable form in order to monitor the input signals.

↳ oscilloscopes.

↳ Numerical displays.

↳ Panel meters.

↳ Data can be either permanently or temporary stored or recorded.

→ optical recorder

→ ultraviolet recorders.

→ stylus and ink recorder.

Objective of Data acquisition system :-

- * must acquire the necessary data, at correct speed
- * use of all data efficiently to inform the operator about the state of the input
- * must monitor the complete plant operation to maintain on-line optimum and safe operation.

Application / uses of DAS

- * Analog DAS is used when wide frequency width is required or when lower accuracies can be tolerated.
- * Digital DAS is used when physical quantity being monitored has narrow bandwidth and also when high accuracy and low channel cost is required.
- * Telemetry \rightarrow it is a process of measurement of a distance
- * Telemetry system :- Telemetry system are used to monitor physical characteristics such as temp., pressure, speed, pressure, flow rate, liquid level transducer convert these physical characteristics into electrical signals, These electrical signals are then processed in various way and sent to a control monitoring location.
- * Mostly used in spacecraft and many chemical plant.

Types of telemetry system.

- ① Land line telemetry.
- ② Radio frequency telemetry system.

Land line telemetry

The transmission is through by landline or cableline.

Transmission limit :- Below 1 Km.

- Examples ,
- ① Voltage Telemetry.
 - ② Current telemetry.
 - ③ Position Telemetry.

\downarrow Bridge Type.

\downarrow Synchro. Telem.

* Radio frequency Telemetry. - The transmission of Data through by wireless channels using radio freq. wave.

Limit - 1 to 50 km.

Example - Frequency T.M.
Pulse T.M.

* Land line telemetry -

* voltage telemetry :-

