

The background is a blue gradient with white circuit traces in the corners. The traces consist of lines and circles, resembling a printed circuit board layout. The top-left and bottom-left corners have more complex, branching traces, while the top-right and bottom-right corners have simpler, more linear traces.

BASIC ELECTRONICS(3320701)

Cable, Connectors & Measuring instruments

ANALOG DISPLAY

- ✓ In analog type instrument there are two main parts
- ✓ One part is stationary and other part is movable
- ✓ The part which can move is called moving system
- ✓ Moving system is mounted on spindle the spindle is pivoted on the jewel bearing
- ✓ A pointer is attached to the spindle which moves over the graduated scale

DIGITAL DISPLAY

- ✓ Digital types display came into existence after the development of digital electronics
- ✓ There is no moving part in digital instrument
- ✓ The quantity measured is converted from analog to digital and it is displayed on the panel



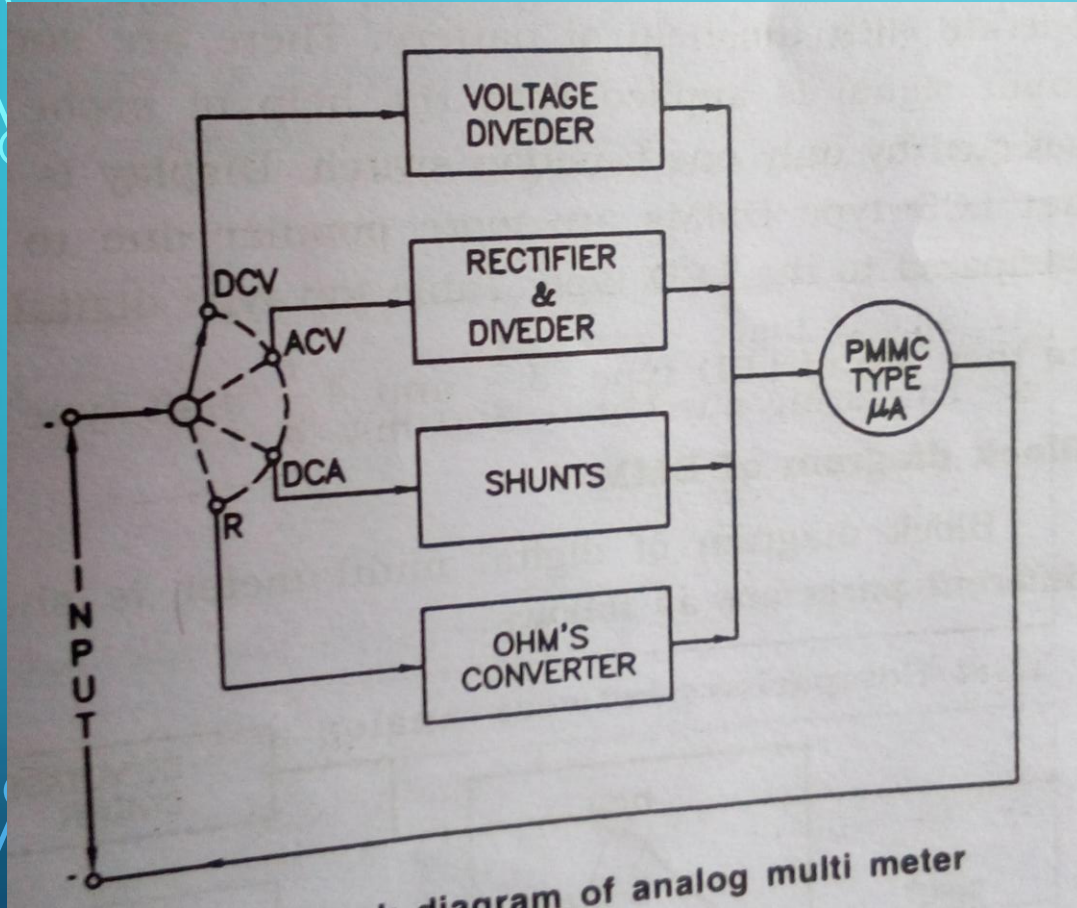
TYPES OF DIGITAL DISPLAY

✓ There are two types of digital display

✓ They are 1)LED and 2)LCD

<u>LED(LIGIT EMITTING DIODE)</u>	<u>LCD(LIQUID CRYSTAL DISPLAY)</u>
<ul style="list-style-type: none">• <i>Size is big</i>	<ul style="list-style-type: none">• <i>Size is small</i>
<ul style="list-style-type: none">• <i>Operating current is 500 mA for a 3.5 digit display</i>	<ul style="list-style-type: none">• <i>Operating current is 125 μA for a 3.5 digit display</i>
<ul style="list-style-type: none">• <i>Can be seen in dark</i>	<ul style="list-style-type: none">• <i>Cannot be seen in dark</i>

Analog Multi Meter (AMM)



Permanent magnet moving coil type meter is used in multimeter we can measure dc voltage ac voltage current and resistance in different ranges the function can be selected by the function switch range is also included in the function switch

Dc voltage is given through the voltage divider which is a chain of resistors voltage is displayed on the scale with help of pointer as permanent magnet moving coil type meter is used it can respond to the dc dc voltage only so to measure ac voltage first the ac voltage is converted to dc with the help of rectifier circuit and then through the voltage divider it is given to the meter

Different shunts are used to measure current in different ranges

To measure resistance a constant known current is passed through the resistance this voltage drop is measured and the reading is indicated on the scale which shows resistance

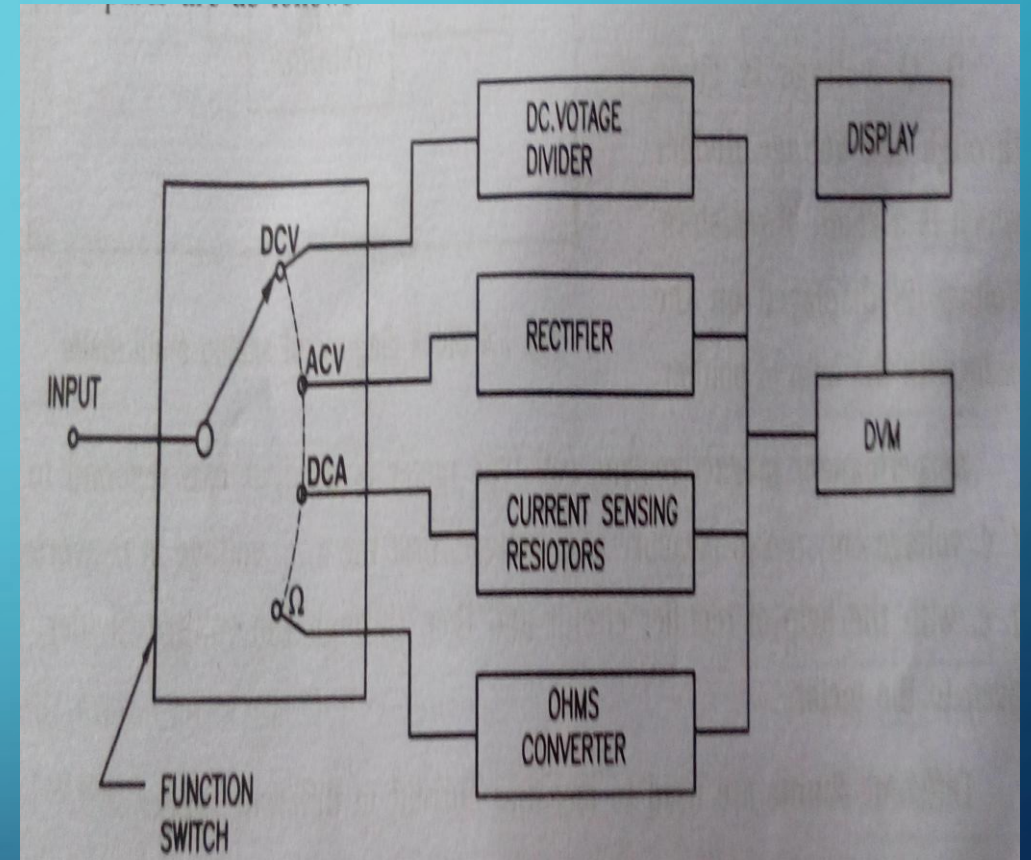
BLOCK DIAGRAM OF AMM

Digital Multi Meter (DMM)

A digital multi meter can also measure dc voltage ac voltage current and resistance just as the analog multi meter can measure digital volt meter is the main part of the meter associated circuits are used to measure different quantities these quantities are converted into dc voltage which is measured different quantities these quantities are converted in to dc voltage which is measured by the volt meter the reading are displayed on the panel of the meter

Parts of dmm are as follows:-

- Function switch
- Dc voltage divider
- Rectifier
- Current sensing resistor
- Ohm's converter
- Digital voltmeter
- Digital display



BLOCK DIAGRAM OF DMM

TYPES OF DIGITAL MULTI METER

Different parts of hand handle DMM is as follows:-

- Input socket
- Selector switch
- display



HAND HELD TYPE DMM



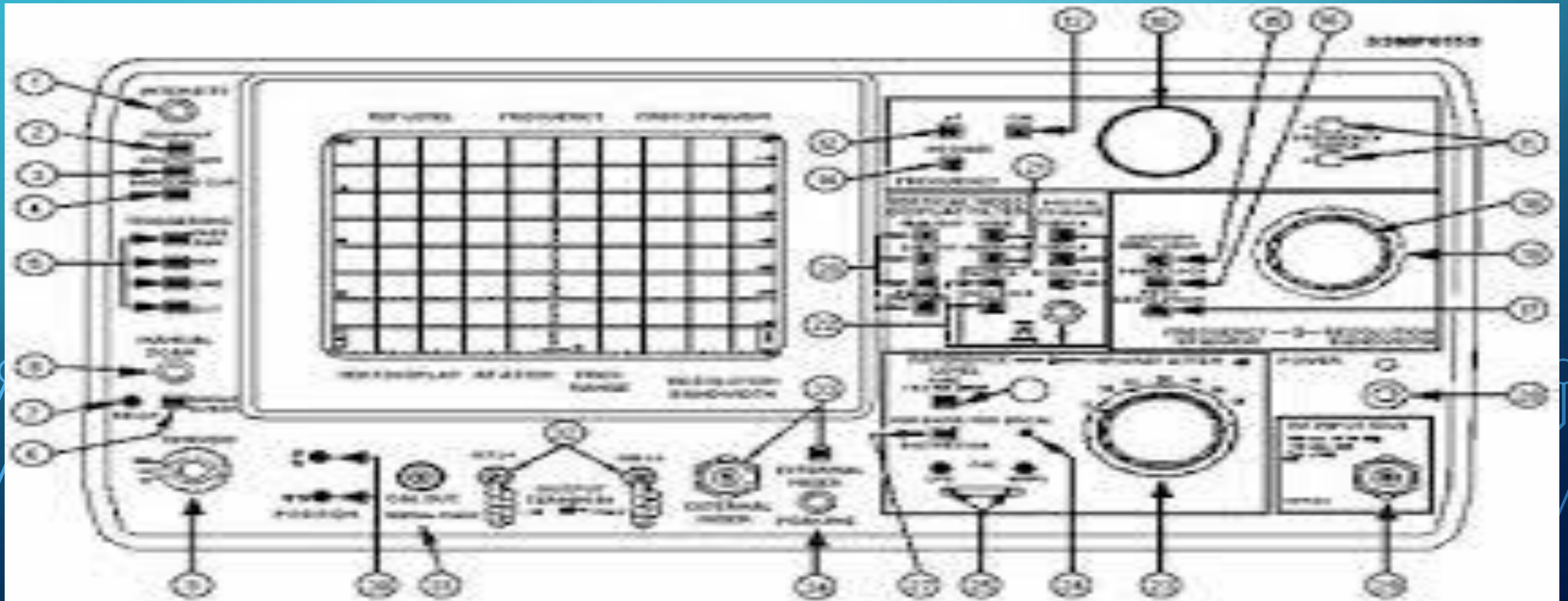
TABLE TOP TYPE DMM

Different parts of table top DMM is as follows:-

- Input binding posts*
- Pilot indicator*
- range switch*
- On/off control switch*
- function switch*
- display*

BLOCKDIAGRAM OF CATHODE RAY

OSCILLOSCOPE(CRO)



Controls on the front panel of simple cro are as follows:-

1. *On power control*
2. *Intensity control*
3. *Focus control*
4. *Y shift*
5. *X shift*
6. *Y gain*
7. *X gain*
8. *Time base*
9. *Synch selector*
10. *input selector*
11. *Y input*
12. *H input*
13. *External synch input*
14. *Led indicator*
15. *Graticule*

FRONT PANEL OF CRO



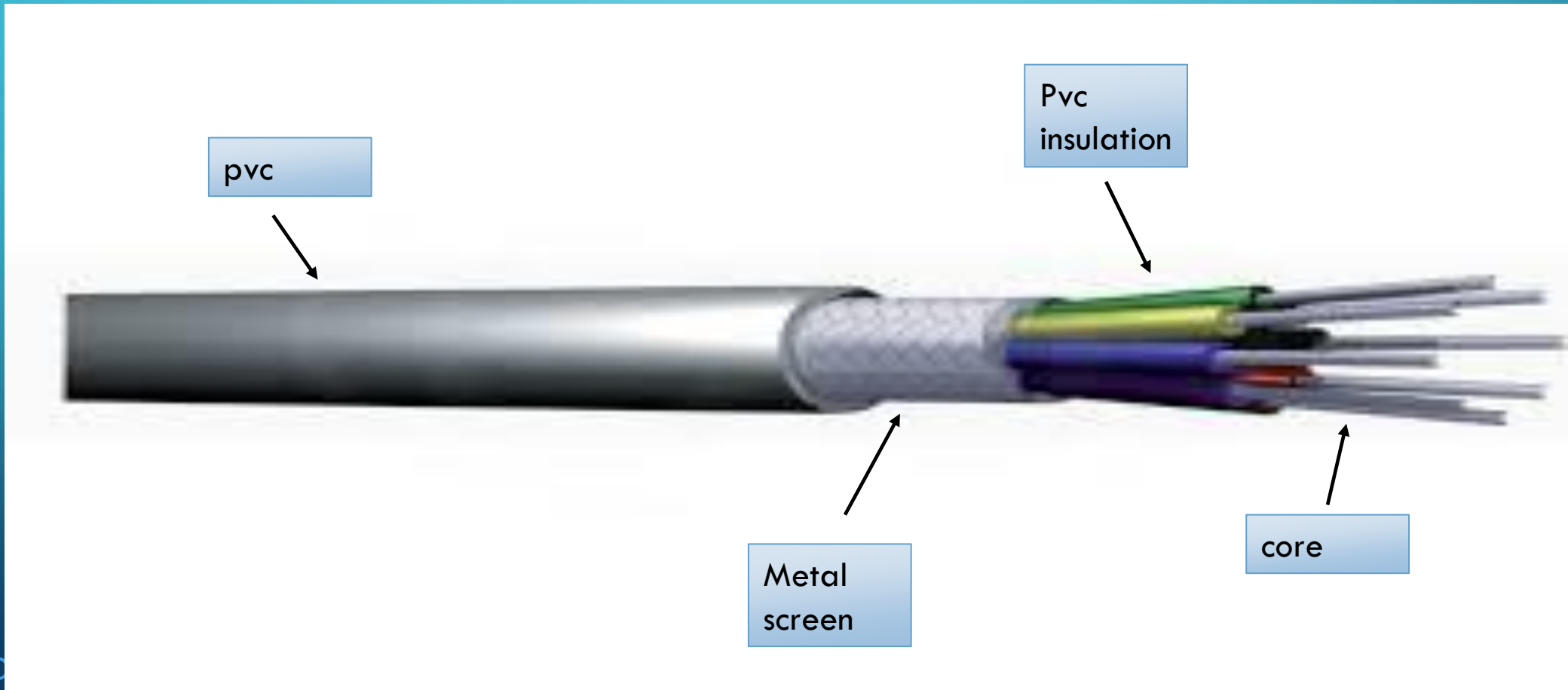
APPLICATIONS OF CRO

- *Measurement of electrical quantities*
- *Measurement of unknown voltage*
- *Measurement of electric current*
- *Measurement of unknown frequency*
- *Measurement of phase difference - power factor*

TYPES OF CABLE

- *Screened cable*
- *Ribbon cable*
- *Coaxial cable*
- *Twisted pair cable*
- *Fiber optic cable*

SCREENED CABLE



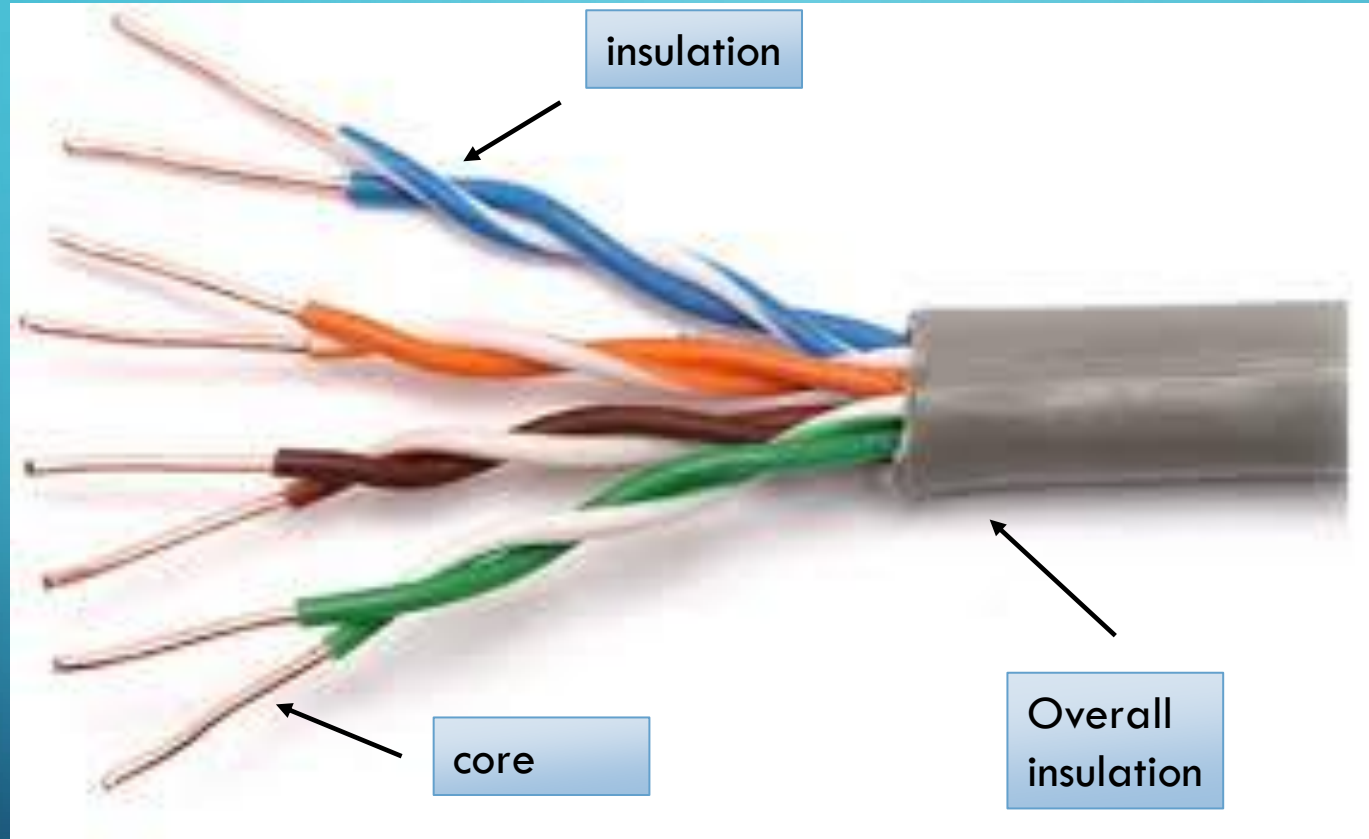
RIBBON CABLE



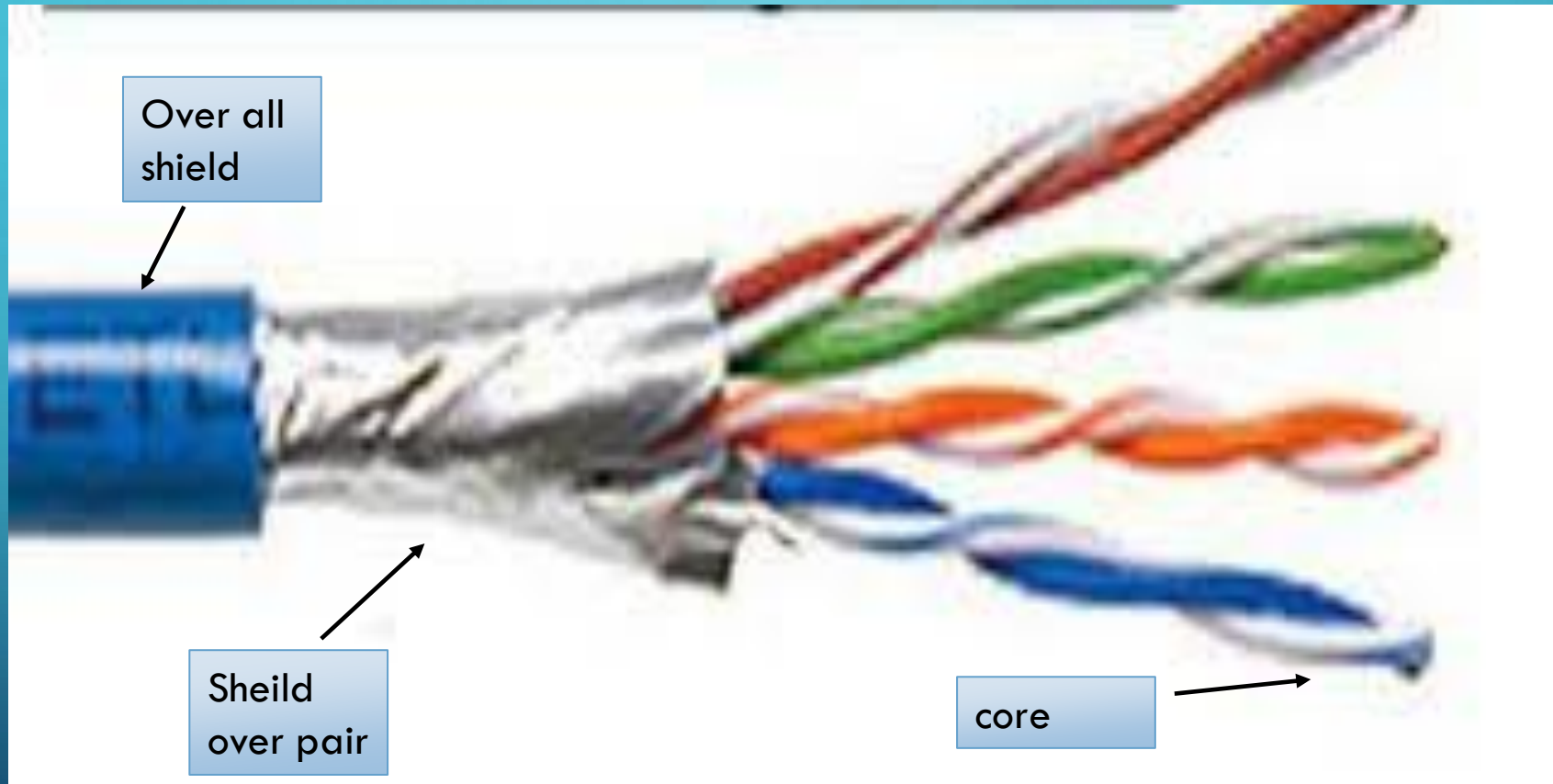
TWISTED PAIR CABLE

- *There are two types of twisted pair cables*
- *They are 1)UTP(Unshielded Twisted Pair cable)
2)STP(Shielded Twisted Pair cable)*

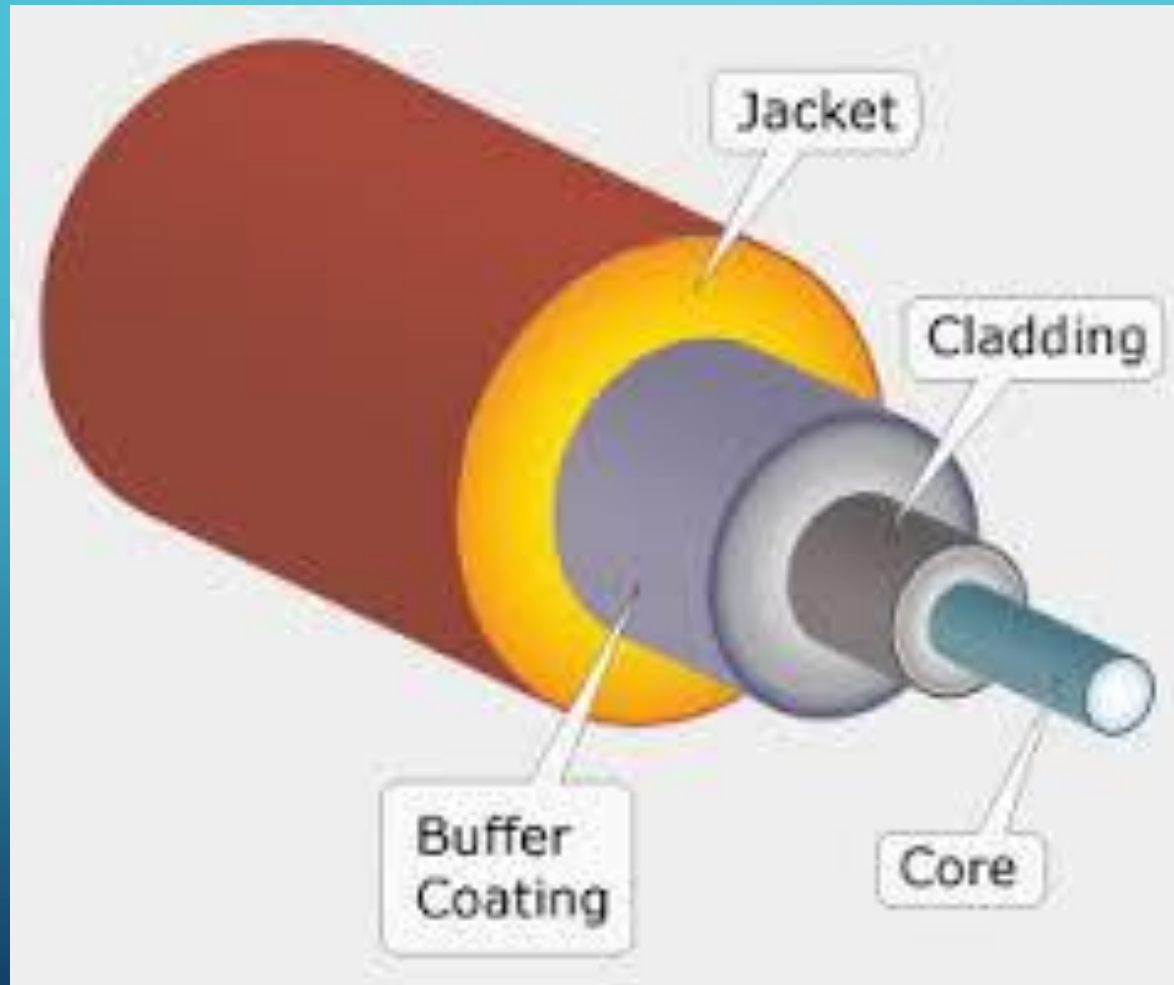
UTP(UNSHIELDED TWISTED PAIR CABLE)



STP(SHIELDED TWISTED PAIR CABLE)



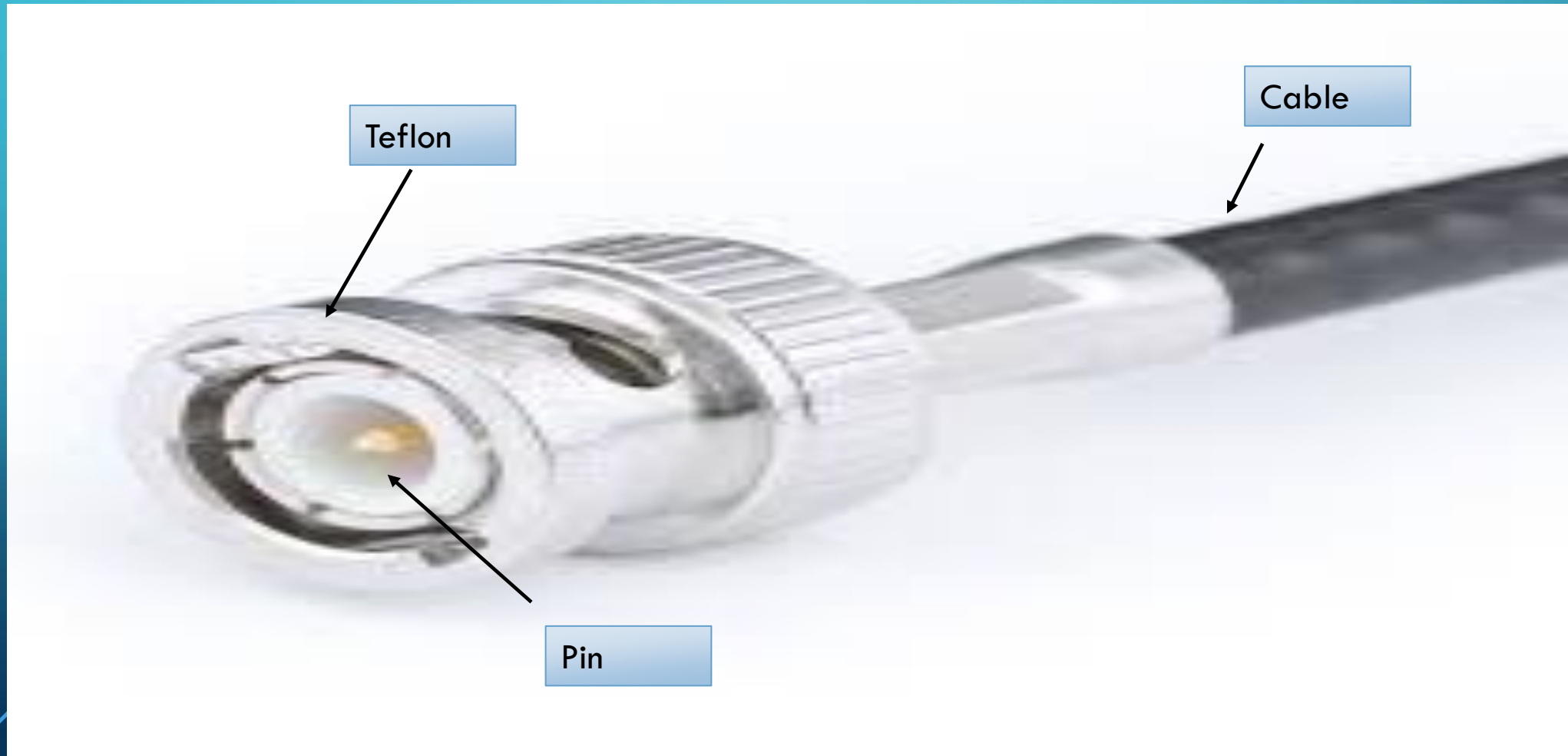
FIBER OPTIC CABLE



TYPES OF CONNECTORS

- BNC
- TNC
- Rj-45
- Rs-232 db 25
- Rs-232 db 9
- HDMI

BNC(BAYONET NEILL CONNECTOR)



POINTS IN BNC

- It is similar to bayonet
- It can be connected or disconnected easily and quickly
- Shell is made of brass and is nickel coated
- Middle contact is made of brass and it is gold or silver plated
- Teflon is used as dielectric
- Its size is small, weight is less and nominal impedance is 50 ohm
- It is used in cro, tv, dvm, communication receiver, etc

TNC(THREADED NEILL CONNECTOR)



Cable

Pin

Threaded coupling

Teflon

POINTS IN TNC

- *Similar to bnc accept for locking arrangements*
- *Locking arrangements is of threaded coupling type*
- *There is no effect of vibration*
- *It is used upto frequency of 11GHz*
- *Its size is small, light in weight and of weather proof type*
- *Its normal impedence is 50 ohms*
- *It is used as microwave ,radio and video linker*

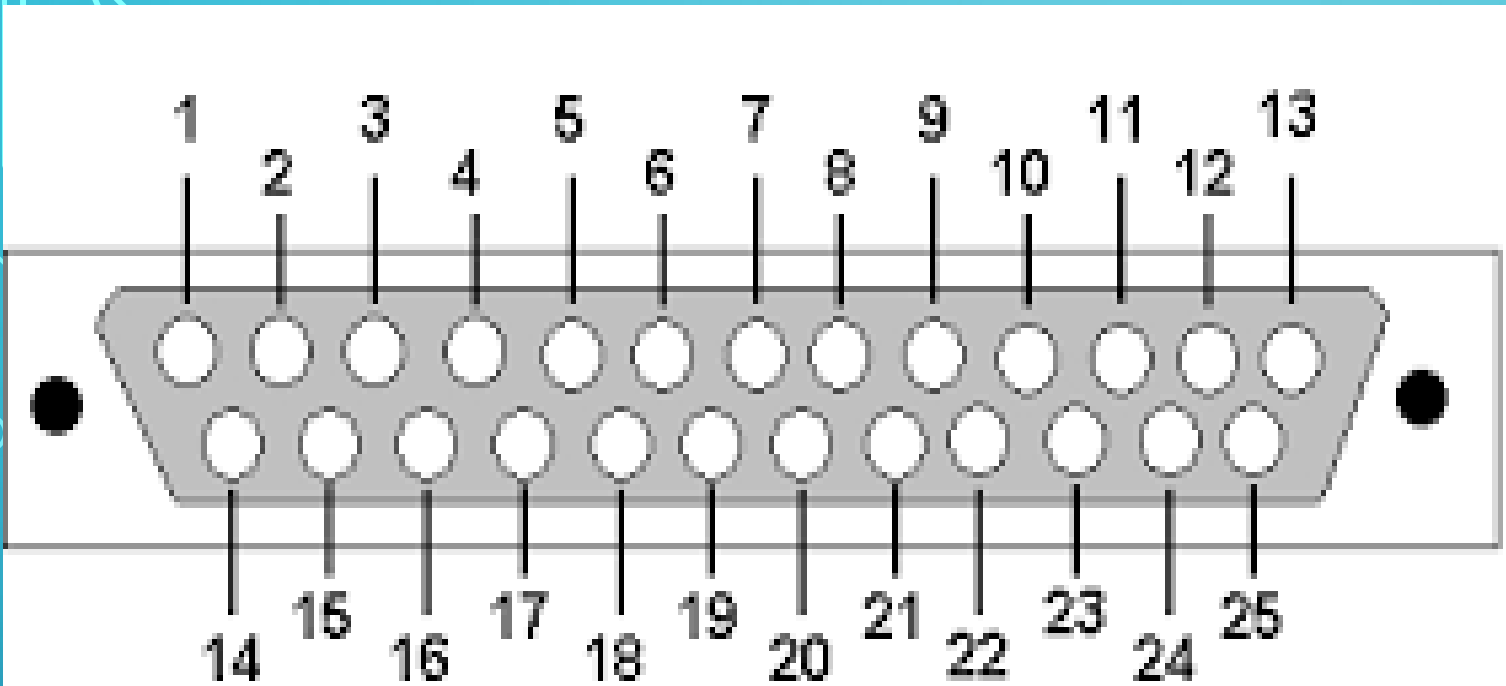
(REGISTERED JACK) RJ-45

EZ-RJ45 CAT5e
Connector

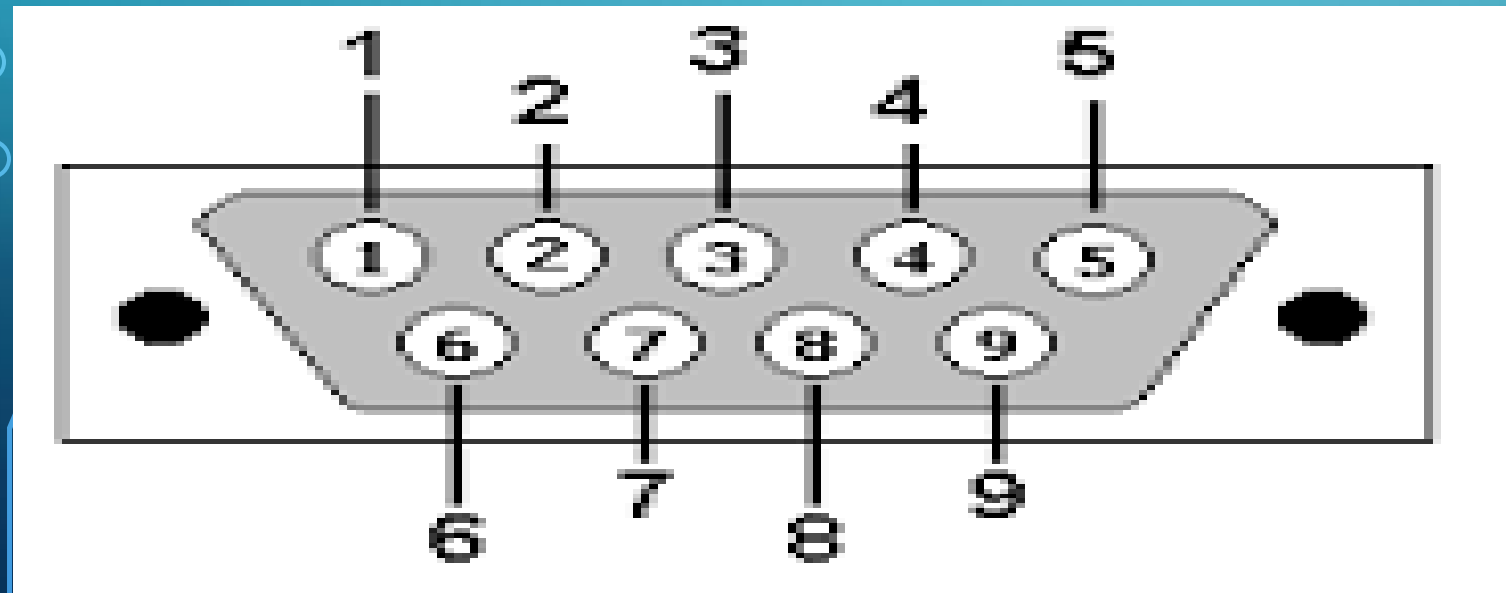


RJ-45

- *This is eight wire type connector*
- *In addition to the use with telecommunication it is used for connecting computers to LAN*
- *Especially with Ethernet*
- *S notch is provided so that the connector cannot be fitted in reverse way*



RS-232 DB 25



RS-232 DB 9

RS-232

- *Rs 232 means recommended standard number 232 while rs 232 c is the latest version of this type of connector*
- *In most of the computers RS 232 C is used*
- *RS232 Cis a 25 pin d type connector though most of the pins are not used*
- *Therefore in most of the pcs 9 pin type male d type connector is used*
- *To indicate pin out of the connector and direction of signal on the pins two terms DTE(Data Terminal Equipment) and DCE(Data communication Equipment) are used*

HDMI CONNECTOR



HDMI

- *HDMI means high definition multimedia interface*
- *It is used for interfacing uncompressed video data and compressed digital data from HDMI source device to compatible digital audio device, computer monitor, video projector or digital television*
- *In short it is the digital replacement of analog video standard*
- *There are three types of this connector such as type A, C and D which have 19 pins*
- *There is another type B which has 29 pins*