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NORTH-EX PUBLIC SCHOOL
(Senior secondary, affiliated to CBSE)
School block, Jain Nagar, Sector-38, Rohini, Delhi-81
LESSON PLAN FOR CLASS XII (COMPUTER SCIENCE)

*Note- Before reading about the topic you must check this link which will help you in understanding the topics.
You can download this or if you do not have facility to get printout then you can ask your ward to copy it in a simple notebook and must do exercise in the notebook.

TOPIC: - Transmission Media with Worksheet 3

1.1 Coaxial Cable (or Coax):

A Coaxial cable consists of two solid insulated conductors that share a common axis. The inner conductor is a straight wire surrounded by wired mesh, each separated by some, kind of foil or insulator. The inner core carries the signal and mesh provides the ground, Coaxial Cable or Coax is most commonly used in Cable TV transmission.

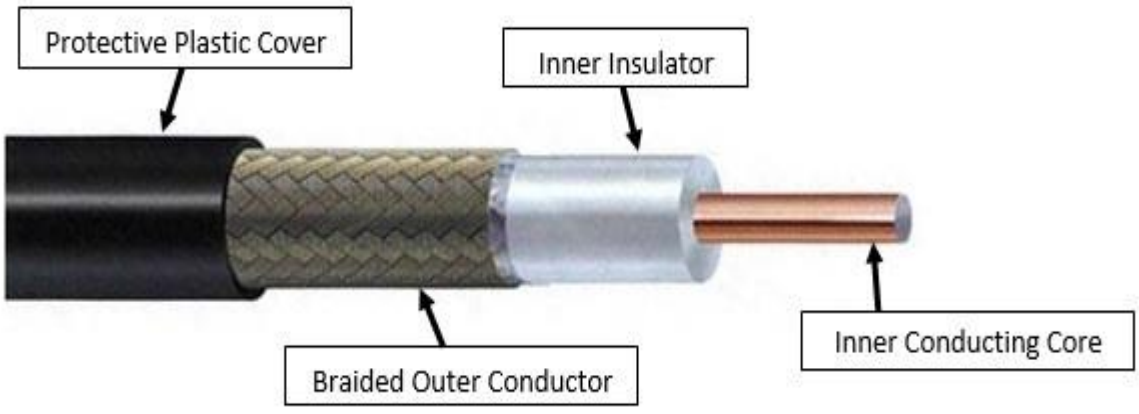

Fig.1: Coaxial Cable (or Coax)

Advantages:

i. It offers high bandwidth and carries data for a longer distance (185-500m) at a stretch.
ii. It suitable for broadband transmission (Cable TV) and can also be used in shared cable network.

Disadvantages:

i. It is less flexible and expensive compared to Twisted Pair Cable.

ii. Due to its thickness (1 cm diameter) and poor flexibility, it is difficult to install aa compare to Twisted Pair Cable.

1.2 Optical Fibre Cable:

Optical Fibre consists of long, thin strands of glass or glass-like material and carries light. It transmits light(photons) instead of electricity over glass or plastic "fibres". Signals are modulated and transmitted in the form of light pulses from source using Light Emitting Diode (LED) or LASER beam. They are arranged in bundles called optical fibre cables and used to transmit data through light signal over long distances.

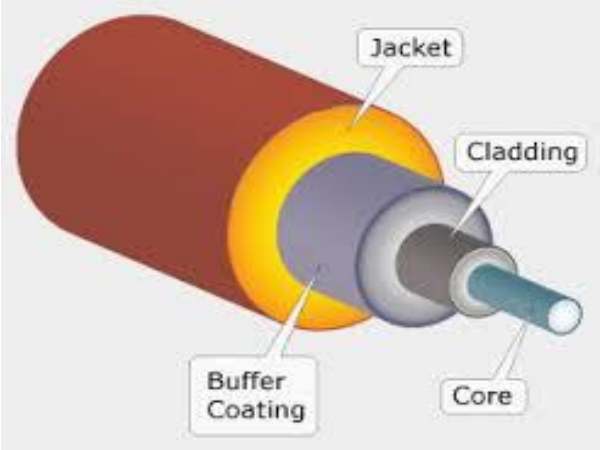

Fig.2: Optical Fibre Cable

An Optical Fibre Cable consists of the following parts:

i. **Core (Glass or Plastic):** It is thin glass rod at the centre through which the light travels.
ii. **Cladding:** It is the outer optical material surrounding the core that reflects the light back to the core.
iii. **Buffer Coating:** It is the plastic coating that protects the cable from damage and moisture.

Advantages:

i. It offers secure and high-speed transmission for a very long distance at a stretch.
ii. It is the most efficient cable available for computer networks.

Disadvantages:

i. It is the most expensive cable and is quite fragile (breakable).
ii. It is installation procedure is quite complicated. Also, it is difficult to join two broken fibres.
iii. It is not suitable for domestic purposes due to its high maintenance cost.

Which Cable(media) is better?

- While setting up a network, the selection of transmission media depends on the cost, data transfer speed, bandwidth and distance.
- Twisted Pair Cable nowadays is mostly used to set up a Local Area Network (LAN) spread across a building or a campus.

Factors	**Twisted Pair Cable**	**Coaxial Cable**	**Optical Fibre Cable**
Data Transfer Rate	10 Mbps-10 Gbps	100 Mbps	> 100 Gbps
Distance (Range)	**100 m**	**185-500 m**	**> 100 Km**
EMI Susceptibility	More	Less	Nil
Cost	Least cost	More than twisted Pair	Very expensive

Worksheet 3

Attempt all questions in your notebook:

Q1) Give one example where coax cable is used.

Q2) What is use of inner conducting core in coax cable?

Q3) Write any two disadvantage of coax cable.

Q4) Explain the parts of optical fibre cable.

Q5) How you can select which transmission media is better?