

**NAME : MUGIYA DAWSON**

**REG NUMBER : R223543P**

**PROGRAM :HNE**

**MODULE :HET102**

**LECTURER :MR SADOCK**

**TITLE : ASSIGNMENT 2**

1.The two types of twisted pair cable are **unshielded twisted pair** (UTP)cable and **shielded twisted pair(STP)** cable.

|  |  |  |
| --- | --- | --- |
|  | UTP | STP |
| Difference 1 | Grounding cable is not required | Grounding cable is required |
| Difference 2 | Noise is high | Noise is comparatively low |
| Difference 3 | Consists of two insulated copperwires twisted around each other | The twisted pair cable is enclosed in a shield |

ii)

|  |  |
| --- | --- |
| Advantages of twisted pair wires | Disadvantages of twisted pair wires |
| It is easy to setup and install | It has very high attenuation |
| It is the cheapest transmission medium for short distance | It supports lower bandwidth as compared to other media |

b)All the power transmitted in FM is useful whereas in AM most of the power is in the carrier which contains no signal

ii)It carries a larger bandwidth because it covers a wider range of frequencies

iii)DSB-SC provides 100% modulation efficiency due to suppression of carrier .

-It also provides a larger bandwidth

iv)-Less bandwidth requirements hence allowing a greater number of signals to travel in the same frequency range

-Lots of power saving

-Reduced interference because of the smaller bandwidth

-increased efficiency because one sideband uses less power

v)When overmodulation occurs the envelopes of the signal cannot be read hence making some of the information that will be in the overmodulated signal to not be read .Since some part of the signal cannot be read the signal is not useable or recovered .

|  |  |
| --- | --- |
| **ADVANTAGES** | **DISADVANTAGES** |
| Through satellite transmission, coverage over geographical area is quite large mainly for sparsely populated areas. | Satellites are not easy to repair and maintain. |
| Security in satellite transmission is usually provided by the coding and decoding equipment | Design, development, investment and insurance of satellite requires higher cost |
| Over long distances, it can be cheaper |  |
|  |  |

2.

Switching technique

Virtual circuit approach

Datagram approach

Time division switches

Space division switches

Packet switching

Message switching

Circuit switching

svc

pvc

b)The three phases are :

* Connection Setup Phase
* Data Transfer phase
* Connection teardown phase

c)Three advantages of message switching :

* Data channels are shared among communication devices, improving the use of bandwidth
* Messages can be stored temporarily at message switches, when network congestion occurs
* Improved efficiency by sharing a channel by many messages

d)The disadvantage of crossbar is that if one switch malfunctions all the subscribers will be inaccessible the solution for this problem is to create backup paths such that if one fails to function the alternative path is used

e)Virtual circuit approach is used in packet switching

f)

|  |  |
| --- | --- |
| **Virtual circuit** | **Datagram** |
| Connection oriented | Has a connectionless service |
| all the packets are going to follow the same path | All packets are free to use any available path |
| Since all packets follow a specific path, packets are received in order at the destination. | The connection-less property makes data packets reach the destination in any order, which means that they can potentially be received out of order at the receiver’s end. |
| Virtual Circuit Switching ensures that all packets successfully reach the Destination | Datagram networks are not as reliable as Virtual Circuits. |
| It very difficult and expensive to setup | easy and cost-efficient to implement |
| It is used by the ATM (Asynchronous Transfer Mode) Network, specifically for Telephone calls. | It is generally used by the IP network, which is used for Data services like the Internet. |