**1) What is plenum, why is it important to understand?**

A plenum is an area where air is passed for circulation in a building. Plenum cables don’t produce toxic fumes when heated or burned. It’s better use for safety. Halogen-sheathed Cat 5 cables are put into plenums above ceilings for safety measures as well.

**2) What are 2 advantages/2 disadvantages of using satellite as a transport media?**

Advantages:

Satellites have high transmissions rates, they communicate simultaneously to any number of stations, and cost is not dependent on distance

Disadvantages:

Vulnerable to eavesdropping, vulnerable to sunspots, interference from rain and fog

**3) What are 2 advantages/2 disadvantages of using twisted pair as a transport media?**

Advantages:

Long distance in telephone systems, inexpensive, repair highly available

Disadvantages:

Easily picks up noise, which leads to higher error rates as length increases

Thin in size, likely to break

**4) What distinguishes CAT 3 and CAT 5 UTP.**

CAT5 is 10 times faster in speed and bandwidth. CAT5 is faster because there are more twists.

**5) Distinguish STP and UTP.**

Shielded and unshielded. Shielded protects the wire against crosstalk interference (which is disruptive to communications signal) but it can slightly alter the electric characteristics of a cable. Shields with metal sheathing.

**6) What are the implications of data transport over satellite as far as software and protocols?**

There are 2 important factors regarding satellite transmission: a 250ms propagation delay and relatively high amount of noise on channels. In addition, satellite transmissions are vulnerable to eavesdropping. Size of the frame relates to reliability of the media.

**7) Name 2 advantages/2 disadvantages associated with Fiber Optics**

Advantages:

Fiber is extremely fast, it’s not affected by electromagnetic radiation, there’s no electric hazard, it’s secure (hard to tap into), small and light, and is durable

Disadvantages:

It’s expensive, cable splicing is required to extend the length, and it is quite expensive to do so

**8) What are the best tools to troubleshoot fiber optic connections/connectivity.**

OTDR (Optical Time Domain Reflectometer) – analyzes cable integrity by measuring the time required for the light signal to reflect from the cable end or break in the fiber. It relays possible cracks, fractures, or discontinuities. Tells the distance where the break is.

Power meter – light emitting device and receiver that measures decibel loss from end to end. Determines fiber budget, as it shows the signal strength and power.

**9) What is a carrier hotel – and its significance?**

A physical building where data communications media converge and are interconnected. Numerous service providers share the facilities of a single carrier hotel. This is where the fiber terminates.

**10) What is a data link protocol? How is data link protocol diff from PHY protocol?**

Data link protocol is the layer (second) that transfers data between adjacent network nodes in a wide area network (WAN) or between nodes on the same local area network (LAN) segment. MAC and LLC. Data link establishes the connection between 2 connected devices.

Data Link vs Physical protocl (CSMA/CD)

- PHY protocol checks for carrier

- Data Link checks for different stuff, like address, frames

**11) What is PoE (Power over Ethernet), - what related IEE standard(s)?**

Using extra strands for more power. Most prevalent device to use it for - voice over IP (phones).