

## FUNDAMENTALS OF VOICE & DATA CABLING

### CHAPTER 4 STUDY GUIDE

1. Name 5 important elements of copper that make it good media for cabling.  
*conductivity, malleability, corrosion resistance, strength, ductility*
2. What is the difference between solid and stranded wires?  
*stranded - flexible, durable, only used for patch cords, wires in a race*  
*solid - single wire, used in IDCs*
3. What is the type of cable that should be used for high temperature applications? Can you use them in plenum areas?  
*fluoropolymers, yes, they are used in plenum areas*
4. What document describes the types of cables and what they should be used for?  
*NEC*  
*protects persons or property from hazards*
5. What does OSHA stand for and kinds of things is it concerned with?  
*Occupational Safety & Health Administration*  
*workers safety*
6. What does UL stand for and what does this organization do?  
*Underwriters Laboratories - product safety testing*
7. What is the term used to describe all the wiring in a building?  
*cable plant*
8. What are the two terms used to describe the different grades of twisted pair cables?  
*category*  
*levels (internationally)*

9. What does AWG stand for and why do we care about it when we talk about cabling?

American Wire Gauge - it sets the thickness of the cable and tells the resistance  
how how many feet of wire has a 1 ohm resistance

lower gauge means thicker wire

10. Which categories of cabling are no longer in the standards?

Cat 2, Cat 4

Cat 1, Cat 5

11. Which category of twisted pair cable is specified by 802.3 as the type of cable to use in Ethernet LANs?

Cat 5e

12. Fill in the following table:

Category	AWG	Hertz	Used for
1	22 or 24		old ports
2	22 or 24	4 Mhz	original token ring (4 Mbps)
3	24		voice only
4		16 Mhz	16 Mbps token ring
5	24	100 Mhz	original Ethernet (100 Mhz)
5e	24	100 Mhz	Ethernet enhanced
6	24	250 Mhz	gigabit ethernet

not used  
not used  
not used  
not made

13. Name six issues that affect cabling performance and briefly describe them.

bending or twisting too much

interference

improper installation

extreme heat & cold - ingress & egress

NIC card

crosstalk

14. What do the following standards describe:

Standard	Who developed it	What it describes
UL 444	UL	safety standards for cable plenum or non-plenum
UL 13	UL	↑ but for electrical cable
ANSI/TIA/EIA-568-B.2	TIA/EIA	everything about networking cable

15. What causes the cancellation effect? What does it do?

noise in one wire becomes canceled out by the other wire with the opposite noise  
only cancels if going down the same pair

16. Why would you use STP instead of UTP?

to decrease EMI & RFI

17. In a UTP pair of wires, which wire is the tip wire and which is the ring wire?

white is tip, solid color is ring

18. What are the ring colors (in order) of 25-pair telephone cable?

blue, orange, green, brown, grey

19. What are the tip colors (in order) of 25-pair telephone cable?

white, red, black, yellow, violet

20. List in order the colors of UTP 4-pair cable.

T568A - G/w, G, O/w, Bl, Bl/w, O, Br/w, B

Bl, Or, Gr, Br

T568B - O/w, O, G/w, Bl, Bl/w, G, Br/w, B

21. Why is it not a good idea to run 900-pair wire between buildings?

most countries have wiring codes that require surge-protecting devices  
at the point where the wires enter the building

22. What are "binders" and how are they coded?

binders are groups of 25-pair wires that are wrapped and color coded for easy troubleshooting

23. What are "super binders" and how are they coded?

several binders put together, only considered this when it has 200 or more wires

24. What is a BNC connector used for? What does it stand for?

British Naval Connector 10Base2  
networking & video applications

25. What is coax cable typically used for today?

TV & video

26. Fill in the following table.

Coax impedance	Radio Grade designation	Used for
50-ohm	RG-58	radio & networking
75-ohm	RG-6 & RG-59	video
93-ohm	RG-62	ARLnet (thicknet)

27. What are the connectors (taps) called that are used with thicknet?

vampire tap

28. What is the term used for cabling that is outside a building? What are some considerations you need to keep in mind that are different than cables that are inside the building?

outside plant cables  
must withstand sunlight, hot & cold, direct burial, rodents

29. What does grounding mean? How do you typically ground a cable/wire?

provides a safe path for unwanted voltages  
connect the chassis to the earth

30. What does bonding mean?

interconnecting grounding equipment