FUNDAMENTALS OF VOICE & DATA CABLING
CHAPTER 5 STUDY GUIDE

1. If you're using fiber optic cabling, why must there be at least 2 fibers for data communications to work?

   one Tx, one Rx

2. What are the 5 elements of a fiber cable (in order)?

   core, cladding, buffer, strength material, jacket

3. Fill in the following table:

	Single-mode Fiber	Multi-mode Fiber
Length of cable run	3000 m	2000 m
Diameter of core	7-10 microns	62.5 microns
Diameter of cable	900 microns	900 microns
Used for?	long distances between buildings	backbones
Light source	laser	LED
Wave lengths	540 nm & 1520 nm	540 nm & 1520 nm
Connector(s)	ST	SC

4. What is the minimum bend radius used in fiber-optic enclosures?

   5 cm

5. What advantages does fiber cabling have over copper?

   no EMI/RFI
   almost impossible to tap
   decreased attenuation
   more bandwidth
   cost effective over long term installation

6. What are some disadvantages fiber cabling has over copper?

   not portable
   initial cost
   more delicate
   more training and skill

7. What are some typical materials used to make fiber cables?

   glass, kevlar, PVC

8. What is the difference between loose-tube and tight-buffered cables? What would you use each type for?

loose tube has gel used for preventing moisture

loose tube has no strengthing material, used underground or outside

tight buffered - complete cable, used for indoor backbone, breakout

9. What is the "angle of incidence"? Should the angle utilized for light to enter and exit a fiber-optic cable be greater or less than this angle?

greater than the critical angle

10. What does "refraction" mean?

11. What is the "refractive index"?

12. Define the following multiplexing terms:

Term	Definition
Multiplexing	multiple data sources on one cable
Demultiplexing	separating multiple data signals
Time-division multiplexing (TDM)	
Asynchronous time-division multiplexing (ATDM)	
Frequency-division multiplexing (FDM)	
Statistical multiplexing	
Dense wavelength division multiplexing (DWDM)	