Study Guide: Light Sources and Laser Safety

1. Define the following properties of laser light:
    a. Monochromaticity
    b. Directionality
    c. Coherence

2. Distinguish between the different types of nonlaser light sources and identify their characteristics.

3. Record various nonbeam hazards such as electrical and chemical hazards.

4. Label a diagram of the human eye, showing its principal parts. State the function of each principal part.

5. Match the parts of the eye with the spectral regions to which they are most vulnerable.

6. Given the basic information required, calculate retinal spot size and retinal irradiance.

7. Describe the following laser classifications based upon the potential hazards to include the representative power levels:
    a. Class 1 laser
    b. Class 2 laser
    c. Class 3A laser
    d. Class 3B laser
    e. Class 4 laser

8. Define maximum permissible exposure (MPE). State why it's important.

9. Describe three general types of laser hazard controls.

10. Describe laser-hazard warning signs.

11. Describe the most frequent causes of laser accidents.

12. List five laser safety precautions that are applicable to all types of lasers.

13. Explain the difference between incandescent and fluorescent light sources.

14. Calculate the irradiance of a laser beam in watts/cm^2 if the power of the laser beam is 500 milliwatts and the diameter of laser beam is 2 mm.

15. Explain when to use a:
    a. Caution sign
    b. Danger sign
    c. Notice sign

16. Calculate the transmission through filters with the following optical densities:
    a. OD = 2
    b. OD = 5
    c. OD = 6
    d. OD = 8

17. Explain the difference between engineering controls, administrative controls, and personal protective equipment in regard to control measures.

18. Explain the role of the laser safety officer (LSO) in an industrial environment.

19. Identify the maximum intrabeam permissible exposure (MPE) for the eye:
    a. CO_2 laser for 10 seconds
    b. HeNe laser for 0.25 second
    c. Argon laser for 600 seconds
    d. XeCl laser for 30,000 seconds

20. Discuss the nonbeam hazards described in this module and suggest procedures and controls to reduce or eliminate them.
