Questions Bank for the First Semester Optics Lab.

Exp. 1

1. Explain what is the meaning of a real depth and apparent depth?
2. Write an equation for finding the refractive index depending on a real depth and apparent depth
3. How does refractive index of a substance is affected by refractive index of surrounding medium?

Exp. 2

4. Define refractive index
5. Why light refract when it passes through two different mediums?
6. Explain the relation between refractive index and density
7. What are the main factors that refractive index depends on?
8. What are the main rules for the reflection process?
9. What are the main rules for the refraction process?
10. Is the angle of refraction always less than the angle of incidence?
11. Explain how the speed of light vary with the refractive index
12. Is there any angle at which light does not bend when it goes from air into glass? Explain.
13. Does diffused reflection mean the failure of the law of reflection?

Exp. 3

14. Define a prism
15. What is the benefit of using a spectrometer in the optics laboratory?
16. What are the main parts of a spectrometer?
17. What is the meaning of Apex angle and minimum deviation angle in a prism?
18. Write an equation for finding the refractive index by using a spectrometer?
19. Define the resolving power of a prism
20. Explain the relation between wavelength and the refractive index
21. Which color is more refract in a prism? why?
22. List the factor responsible for the angle of deviation through prism depends.

Exp.4

23. Define the focal length
24. What is the unit of focal length?
25. Define a convex lens
26. How a convex lens work?
27. What is the difference between convex lens and concave lens?
28. What is the benefit of using convex lens in the optics lab.?

29. Write an equation for finding the focal length of a convex lens?
30. What are the main parameters that the focal length of a less depends on?
31. How the image formed by a convex lens?
32. Is the image formed by a convex lens real or virtual? Explain?

Exp.5

33. Define the spherical aberration
34. What is the reason behind a spherical aberration?
35. How can we minimize the spherical aberration?
36. Can we reduce totally the aberration from a lens or not? Why?
37. What are the types of aberration?
38. Explain the difference between a thick lens and thin lens in terms of spherical aberration

Exp.6

39. Define the inverse square law
40. Write an equation for the inverse square law.
41. What is the relation between intensity of light and the distance from the source?
42. Why we use Lux-meter in the optics lab.?
43. If we use a laser source instead of an ordinary light, what will be the effects on the inverse square law?

Exp. 7

44. Define Lambert's cosine law
45. What is the relation between intensity of light and the angle of reflection?
46. How a reflected surface (regular or diffuse) effect on the intensity of light?
47. Let us suppose you are in a dark room. Can you see objects in the room? Can you see objects outside the room? Explain.

Exp.8

48. Define Astigmatism
49. What cause an astigmatism?
50. What is the relation between tangential and sagittal focal length with angle of incident ray?
51. How can we minimize the Astigmatism?