

STD:- XUNIT-2 OPTICS

SUB:- SCIENCE

I. SHORT ANSWER:1. Fillups:-

- a). The path of light is called — and group of these rays are called as —.
  - b). The speed of light in vacuum or air is —.
2. Define Refraction.
  3. Distinguish between luminous and non-luminous objects
  4. What is monochromatic source of light?
  5. What is scattering of light?
  6. What is elastic scattering?
  7. State the Rayleigh's scattering law.
  8. Correct the mistakes:
    - (a). Tyndall scattering is responsible for the white appearance of the clouds.
    - (b). Raman scattering causes the sky to appear in blue colour.
  9. What is Tyndall Effect?
  10. What is colloid? Give example.
  11. Define - Raman scattering.
  12. What is Stokes and Anti Stokes lines?
  13. What is lens? Write its types.

14. Fill ups:-

(a). The spectral lines having frequency equal to the incident ray frequency is called —.

(b). The spectral lines which are having frequencies other than the incident ray frequency are called —.

15. What is inelastic scattering? Write its types.

16. Write the applications of convex lenses.

17. Write the applications of concave lenses.

18. What is Magnification?

19. Fill ups:-

(i) The lens maker's formula is —

(ii) The lens formula is —

20. Define - power of a lens. Write its unit.

21. Differentiate - Concave lens and Convex lens.

22. What is power of accommodation of the eye?

23. Why does the sky appear in blue colour?

24. What is Refractive index?

25. What is spectrum?

26. What is dispersion of light?

27. What is the sequence of colours that you see on the rainbow?

28. Differentiate the eye defects: presbyopia and Astigmatism.

29. What are the causes of Myopia?

30. Why are the traffic signals red in colours?

31. Write the uses of simple microscope.

32. What is Travelling Microscope?

33. What are the advantages of Telescopes?

34. Differentiate - Telescope and Microscope.

35. Write the types of telescope.

36. Match the following:- [Convex Lens]

| (i).   | <u>position of the object</u> | <u>position of the image</u> |
|--------|-------------------------------|------------------------------|
| (i).   | At infinity                   | (a) Beyond $2F_2$            |
| (ii).  | Beyond C ( $72F$ )            | (b) At $2F_2$                |
| (iii). | At C                          | (c) At focus $F_2$           |
| (iv).  | Between F and C               | (d) Between $F_2$ & $2F_2$   |

37. Pick the odd one out:

(a) Galilean telescope, Keplerian telescope, Newtonian telescope, Achromatic refractors.

(b) Astigmatism, Cataract, ulceration of cornea, Ciliary Muscles.

(c) Milk, Ice cream, smoke, chalk powder.

38. Why is the colour of sun is red at sunrise and sunset? Give reasons.

39. Write the disadvantages of Telescope.

40. Spot the error:

(a). The first telescope was invented by Kepler.

(b) Astigmatism can be corrected by using bifocal lenses.

(c) The eye ball is approximately spherical in shape with the diameter of about 25 cm.

(d) Eye lens is made up of concave in nature.

41. What is known as persistence of vision?

42. Spot the error:

a). The least count of a travelling microscope is 0.001 mm.

b). Retina is made of a flexible, jelly-like material.

43. Match the following:-

(a). Lens maker's formula -  $f = \frac{xy}{x-y}$

(b). Myopia -  $\mu = \frac{c}{v}$

(c). Hypermetropia -  $P = \frac{1}{f}$

(d). Lens formula -  $f = \frac{dD}{D-d}$

(e). power of a lens -  $\frac{1}{f} = (\mu - 1) \left( \frac{1}{R_1} - \frac{1}{R_2} \right)$

(f). refractive index -  $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$

II.

Answer in detail:

1. List any five properties of light.
2. Explain the rules for obtaining images formed by a convex lens with the help of ray diagram.
3. Explain the construction and working of a compound microscope.
4. What is refraction? state and explain the <sup>two</sup> laws of refraction.
5. What is inelastic scattering? Explain the different types of inelastic scattering?
6. Describe - Raman scattering.
7. Write the cartesian sign conventions for spherical lenses.
8. Explain the structure and working of a human eye with neat diagram.
9. State and explain the common defects of human eye. How can these defects be rectified?
10. (a) What is Telescope? (b) Explain the classification of telescope. (c) Write any two advantages and disadvantages of telescope.
11. a) What is Microscope?  
(b) Explain the simple microscope with neat diagram.  
(c) Write any two uses of simple microscope.

12. Differentiate the eye defects: Myopia and Hypermetropia.

13. The human eyes are most valuable and sensitive organs responsible for vision.

(a). What is sclera? Write its function.

(b) Draw the structure of human eye and label it.

(c). What is the far point and near point of the human eye?

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