

1. Attempt all questions.
2. All questions carry equal marks.
3. Draw neat labeled diagrams wherever necessary.
4. For Q 2, Q 3 and Q 4 attempt A and B OR C and D.

**Q 1 Do as directed (Any fifteen)**

**15**

1. Define Reflection
2. State the Law of Refraction.
3. What is the full form of LASER?
4. Write the formula for wave speed.
5. Give the wavelength range of visible light.
6. What is refraction?
7. Give an example of a fluorescence molecule.
8. Write one example of an active medium of Laser.
9. Name the type of thermistor, when the temperature increases, resistance decreases.
10. The phenomenon where there is a change in the frequency of the sound wave due to the motion of the source or observer is called \_\_\_\_\_
11. Name the mechanism of transfer of heat between two adjacent parts of a body because of their temperature difference.
12. Give an example of a paramagnetic substance.
13. The property of a fluid to oppose relative motion between its layers is known as \_\_\_\_\_.
14. What's the angle of contact between water and paraffin?
15. Name the changes in the positions of the atoms with respect to bond angle due to interaction with IR.
16. Luminescence produced by intervention of an enzyme known as \_\_\_\_\_.
17. What is Stoke's shift?
18. True or False. The Luminometer has two monochromators.
19. Give one advantage of spectrophotometer.
20. The primary filter in spectrofluorimetry is placed in between \_\_\_\_\_.

**Q. 2 A** A converging lens of focal length 10.0 cm forms images of an object situated at various distances. If the object is placed 10.0 cm from the lens, locate the image, state whether it's real or virtual, and find its magnification.

**08**

**Q. 2 B** Give an account on LASER system

**07**

**OR**

**Q. 2 C** Describe Fluorescence Microscope with diagram.

**08**

**Q. 2 D** Explain Ray diagram of converging lenses.

**07**



- Q. 3 A Explain in detail the applications of ultrasonic sound waves. 08
- Q. 3 B Elaborate on different types of magnetism 07
- OR
- Q. 3 C Elaborate in detail on the theory, principles, and workings of the thermistors. 08
- Q. 3 D Explain in detail the applications of surface tension in biology. 07
- Q. 4 A What is Luminescence? Explain the principle and application of luminometry. 08
- Q. 4 B Explain the application of spectrofluorimetry. 07
- OR
- Q. 4 C Explain working and application of UV spectrophotometry. 08
- Q. 4 D Discuss the principle and instrumentation of IR. 07
- Q. 5 Write Short notes on **any three** of the following 15
- a. Audible sound waves
  - b. Scanning Electron Microscope
  - c. Principle of Raman Spectroscopy
  - d. Wettability
  - e. Types of spectra