G10 Science: Class 11 Homework

1. When you watch a move projected onto a screen, you are seeing an image. Traditional-style move projectors include a light and a lens to project the picture onto the screen.

    a. What type of lens is used in the projector? Explain. **[2 marks]**

    b. Draw a ray diagram that includes the film (the object), the lens, and the image on the screen. **[3 marks]**

    c. Describe the SALT characteristics of this image. **[4 marks]**

2. A converging lens has a focal length of 23cm. A frog is 32cm from the lens. Use the thin lens equation to calculate where the image of the frog will be located. **[4 marks]**

3. A diverging lens has a focal length of 34cm. An upright, virtual image of a small booklet is located 13cm behind the lens. Where is the booklet located? **[4 marks]**

4. A vase of height 12cm is placed in front of a converging lens. An inverted image of height 35cm is noticed on the other side of the lens.

    a. Use the magnification equation to calculate the magnification of the lens. **[4 marks]**

    b. What is the attitude of this image? **[1 mark]**

5. A small fork is placed 9.4cm in front of a lens. An upright, virtual image of the fork with a magnification of 5.6 times is observed.

    a. Where is the image located? **[3 marks]**

    b. What is the focal length of this lens? **[3 marks]**

    c. What kind of lens is this? Explain. **[1 mark]**

6. A converging has a focal length of 16cm. An insect is located 11cm from the lens. Where will the image of the insect be located? **[4 marks]**

7. A pencil is located 53cm from a diverging lens. An upright, virtual image of the pencil is observed 18cm from the lens. Use the thin lens equation to calculate the focal length of this lens. **[4 marks]**

8. A playing card of height 14cm is placed in front of a converging lens. An inverted, real image of height 7.9cm is noticed on the other side of the lens. What is the magnification of the lens. **[4 marks]**

9. A postage stamp of height 2.8cm is placed in front of a diverging lens. A virtual image of height 1.3cm is noticed on the same side of the lens as the stamp.

    a. What is the magnification of the lens? **[4 marks]**

    b. What is the attitude of the image? **[1 mark]**

10. Describe at least three similarities between a camera and the human eye. **[3 marks]**

11. Compare and contrast:

    a. Hyperopia and Myopia **[3 marks]**

    b. Positive Meniscus and Negative Meniscus **[3 marks]**

    c. Compound Microscope and Refracting Telescope **[3 marks]**

12. a) People often require reading glasses as they get older. What vision problem do these people usually have and what causes it? **[3 marks]**

    b) Which corrective lens shape corrects this problem, a positive meniscus or a negative meniscus? Explain. **[2 marks]**