

Physics - ICS Part 1 Physics Chapter 9 Short Questions Test

Q1. In Newton's rings, Why are the fringes circular?

Ans 1: The thickness of the air film between plano-convex lens and plane glass plate is almost zero at the point of contact "o" and gradually increases as we proceed towards the periphery of the lens. Thus, points where the thickness of air film is constant will lie on a circle with "o" as centre. That is why circular fringes are produced.

Q2. What do you mean by the term wavefront and ray of light?

Ans 1: Such a surface on which all the points have same phase of vibration is known as wavefront. A line normal to wavefront including the direction of motion is called a ray of light.

Q3. Why diffraction grating cannot be used for X-Rays diffraction?

Ans 1: In order to observe the effects of diffraction, the grating spacing must be of the order of wavelength of the incident light. X-rays are of much shorter wavelength of the order of 10^{-10} M. The regular array of atoms in a crystal forms a natural diffraction grating with spacing $=10^{-10}$ M. Which is not available in other diffraction grating.

Q4. Write down selective absorption method to obtain plane polarized light from ordinary light.

Ans 1: Selective Absorption: The selective absorption method is the most common method to obtain plane polarized light by using certain types of materials called dichroic substances. These materials transmit only those waves whose vibrations are parallel to a particular direction and will absorb those waves whose vibrations are in other directions. One such commercial polarizing material is a polaroid.

Q5. Define polarization of light.

Ans 1: The phenomenon in which the vibration of waves can be oriented to any one direction (plane), That may be vertical, horizontal or any other direction is called polarization of light.

Q6. Under what conditions two or more sources of light behave as coherent sources?

Ans 1: Two or more sources of light behave as coherent sources if

1. They emit monochromatic wave.
2. They are phase coherent.

Q7. In Newton's rings, Why are the fringes circular?

Ans 1: The thickness of the air film between plano-convex lens and plane glass plate is almost zero at the point of contact "o" and gradually increases as we proceed towards the periphery of the lens. Thus, points where the thickness of air film is constant will lie on a circle with "o" as centre. That is why circular fringes are produced.

Q8. Write the names of any four processes to obtain plane polarized beam of light from un-polarized light.

Ans 1: This can be achieved by four processes such as

1. Selective absorption
2. Refraction throughout crystals
3. Reflection from different surfaces
4. Scattering by small particles.

Q9. If white light is incident on a film of irregular thickness at all possible angles, what will be the pattern of interference fringes? Explain your answer.

Ans 1: If white light is incident on a film of irregular thickness at all possible angles, we should consider the interference pattern due to each spectral colour separately. If at a certain place condition of destructive interference of one colour is satisfied then that portion of film will exhibit the remaining constituent colours of white light.

Q10. What is polarization of light?

Ans 1: The phenomenon in which the vibration of waves can be oriented to any one direction, that may be vertical, horizontal, or any other direction is called polarization of light.
