

Physics - ICS Part 1 Physics Chapter 9 Short Questions Test

Q1. What are Newton's rings?

Ans 1: When a plano-convex lens of long focal length is placed in contact with a plane glass plate, a thin air film is enclosed between them to form circular dark and bright fringes known as Newton's rings.

Q2. 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.

Q3. How would you distinguish between un-polarized and plane polarized lights?

Ans 1: Un-Polarized lights: A beam of ordinary light consists of electric and magnetic vibrations which are perpendicular to the direction of propagation. It is called un-polarized light.

Plane Polarized lights: The beam of light in which all vibrations are confined to one plane of vibration is called plane polarized light.

Q4. Can you obtain plane polarized light from un-polarized light? If your answer is yes, write the name of two processes by which plane polarized light is obtained.

Ans 1: Yes, we can obtain plane polarized light from un-polarized light.
This can be achieved by processes such as

- Selective absorption
- Reflection from different surfaces

Q5. How would you manage to get more orders of spectra using a diffraction grating?

Ans 1:

Q6. What is the usual way to obtain plane wavefront from a point source?

Ans 1: A usual way to obtain a plane wavefront is to place a point source of light at the focus of a convex lens. The rays coming out of the lens will constitute plane waves.

Q7. What is Michelson's interferometer? Also write its working principle.

Ans 1: Michelson's interferometer is an instrument that is capable of measuring distance with extremely high precision.

Its working is based on interference. When light from a single source splits up into two parts and then interfere, it forms an interference pattern.

Q8. What do you mean by coherent source ? Explain a common method for producing two coherent sources.

Ans 1: The monochromatic sources of light which emit waves, having a constant phase difference are called coherent sources. A common method of producing two coherent light beams is to use a monochromatic source to illuminate a screen containing two small holes, usually in the shape of slits. The light emerging from the two slits is coherent because a single source produces the original beam and two slits serve only too split it into two parts.

Q9. What condition must be met by interfering beams to observe the phenomena of interference?

Ans 1: The following conditions must be met, in order to observe the phenomenon.

1. The interfering beams must be monochromatic, that is, of a single wavelength.
 2. The interfering beams of light must be coherent.
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Q10. What are conditions for detectable interference of light?

Ans 1: For detectable interference, light beam should be

- Monochromatic
 - Coherent
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