CLASS : XII

**Chapter-**Diffraction and polarization of light

**Topic:** Fraunhofer diffraction by single slit, condition for the formation of minima and Secondary maximum polarization of light, Brewster's law.

**Multiple choice questions :**                                                   **1 X 15 = 15**

1.  A diffraction pattern is obtained using a beam of red light. What will happen if red light is

    replaced by blue light ?

    (a) no change                                         b) diffraction bands become narrower and crowded together

    (c) bands become broader and further apart   (d) bands disappear

2.  The penetration of light into the region of geometrical shadow is called

    (a) polarization          (b) interference          (c) diffraction          (d) refraction

3.  Angular width θ of central maximum of a diffraction pattern of a single slit does not depend on

    (a)  distance between slit and source                          (b) wavelength of light used

    (c) width of the slit                                                   (d) frequency of the light used.

4.  Two point white dots are 1mm apart on a black paper. They are viewed by eye of pupil diameter 3 mm

    Approximately, what is the maximum distance at which these dots can be resolved by the eye ?

    [Take wavelength of light = 500 nm]

    (a) 3m                    (b) 6m                    (c) 1m                    (d) 5m

5.  When a unpolarized light of intensity $I_0$ is incident on a polarizing sheet, the intensity of the light

    which does not get transmitted is

    (a) $I_0$                    (b) zero                    (c) $\frac{1}{4} I_0$                    (d) $\frac{1}{2} I_0$

6.  When the angle of incidence on a material is 60°, the reflected light is completely polarized. The

    velocity  of the refracted ray inside the material in ms$^{-1}$ is

    (a)  $3 \times 10^8$          (b) $\frac{1}{4} \times 10^8$          (c) $\sqrt{3} \times 10^8$          (d)        $0.5 \times 0^8$

7.  Which does not show polarization ?

    (a) longitudinal waves in gas                                    (b) transverse waves in gas

    (c) both (a) and (b)                                                   (d) none of these

8. Ordinary light incident on a glass slab at the polarizing angle, suffers a deviation of $22^o$ The value of the angle of refraction in glass in this case is

(a) $56^0$          (b) $68^0$          (c) $34°$          (d) $22°$

9. When a plane polarized light is passed through an analyser and the analyser is rotated through $90^0$, the intensity of emerging light

(a) varies between maximum and minimum          (b) becomes zero

(c) does not vary          (d) varies between maximum and zero.

10. A ray of light strikes a glass plate at an angle of $60°$. If the reflected and refracted rays are perpendicular to each other, then refractive index of glass is

(a) $\dfrac{1}{2}$          (b) $\sqrt{\dfrac{3}{2}}$          (c) $\dfrac{3}{2}$          (d) $1.732$

11. Polaroid glass is used in sun glasses because

(a) it reduces the light intensity to half due to polarization          (b) it is fashionable

(c) it has good colour          (d) it is cheaper

12. What changes on polarization of light ?

(a) frequency          (b) wavelength          (c) phase          (d) Intensity

13. The limit of resolution of eye is approximately

(a) $1°$ angle          (b) l' angle          (c) 1 mm          (d) 1 cm

14. If the red light is replaced by blue light illuminating the object in a microscope, then resolving power of the microscope

(a) decreases          (b) increases          (c) gets halved      (d) remains unchanged

15. In the polarization of light waves, the angle between the plane of vibration and plane of polarization is

(a) $80°$          (b) $45°$          (c) $90°$          (d) $0°$

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