

QB365 Question Bank Software Study Materials

Wave Optics 30 Important 1 Marks Questions With Answers (Book Back and Creative)

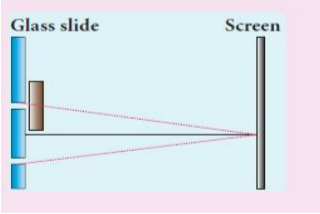
12th Standard

Physics

Total Marks : 30

Multiple Choice Question

30 x 1 = 30

- 1) A plane glass is placed over a various coloured letters (violet, green, yellow, red) The letter which appears to be raised more is _____.
(a) red (b) yellow (c) green **(d) violet**
- 2) Two point white dots are 1 mm apart on a black paper. They are viewed by eye of pupil diameter 3 mm approximately. The maximum distance at which these dots can be resolved by the eye is _____. [take wavelength of light, $\lambda = 500 \text{ nm}$]
(a) 1 m **(b) 5 m** (c) 3 m (d) 6 m
- 3) In a Young's double-slit experiment, the slit separation is doubled. To maintain the same fringe spacing on the screen, the screen-to-slit distance D must be changed to, _____.
(a) 2D (b) $\frac{D}{2}$ (c) $\sqrt{2}D$ (d) $\frac{D}{\sqrt{2}}$
- 4) Two coherent monochromatic light beams of intensities I and 4I are superposed. The maximum and minimum possible intensities in the resulting beam are _____.
(a) 5I and I (b) 5I and 3I **(c) 9I and I** (d) 9I and 3I
- 5) When light is incident on a soap film of thickness $5 \times 10^{-5} \text{ cm}$, the wavelength of light reflected maximum in the visible region is 5320 Å. Refractive index of the film will be, _____.
(a) 1.22 **(b) 1.33** (c) 1.51 (d) 1.83
- 6) First diffraction minimum due to a single slit of width $1.0 \times 10^{-5} \text{ cm}$ is at 30° . Then wavelength of light used is, _____.
(a) 400 \AA **(b) 500 \AA** (c) 600 \AA (d) 700 \AA
- 7) A ray of light strikes a glass plate at an angle 60° . If the reflected and refracted rays are perpendicular to each other, the refractive index of the glass is, _____.
(a) $\sqrt{3}$ (b) $\frac{3}{2}$ (c) $\sqrt{\frac{3}{2}}$ (d) 2
- 8) One of the of Young's double slits is covered with a glass plate as shown in figure. The position of central maximum will, _____.

(a) get shifted downwards **(b) get shifted upwards** (c) will remain the same (d) data insufficient to conclude
- 9) Light transmitted by Nicol prism is, _____.
(a) partially polarised (b) unpolarised **(c) plane polarised** (d) elliptically polarised
- 10) The transverse nature of light is shown in,
(a) interference (b) diffraction (c) scattering **(d) polarisation**
- 11) A rear mirror of a vehicle is cylindrical having a radius of curvature of 10 cm. The length of the arc of the curved surface is also 10 cm. If the eye of the driver is assumed to be at a large distance, from the mirror, then the field of view in radian is _____.
(a) 0.5 **(b) 1** (c) 2 (d) 4

- 12) A point object is placed at the center of a glass sphere of radius 6cm and refractive index 1.5. The distance of the virtual image from the surface of the sphere is _____.
- (a) 2 cm (b) 4 cm **(c) 6 cm** (d) 12 cm
- 13) An equal convex lens of focal length 20cm is cut along a plane perpendicular to the principal axis into two equal parts. The ratio of the focal length of new lenses formed is _____.
- (a) 1: 1** (b) 1: 2 (c) 2: 1 (d) $2 : \frac{1}{2}$
- 14) The distance between an object and a divergent lens is m times the focal length of the lens. The linear magnification produced by the lens will be equal to _____.
- (a) m (b) $\frac{1}{m}$ (c) m + 1 **(d) $\frac{1}{m+1}$**
- 15) A ray of light is traveling in the direction $\frac{1}{2}(i + \sqrt{3}j)$ is incident on a plane mirror. After reflection, it travels along with the directions $\frac{1}{2}(i - \sqrt{3}j)$. The angle of incidence is _____.
- (a) 30°** (b) 45° (c) 60° (d) 75°
- 16) When a light wave goes from air into water medium, the quantity that remains unchanged _____.
- (a) speed (b) amplitude **(c) frequency** (d) wavelength
- 17) Diameter of a Plano -Convex lens 6 cm and thickness at the centre is 3mm. If the speed of light in the material of the lens is 2×10^8 m /s, focal length of the lens is _____.
- (a) 15 cm (b) 20 cm **(c) 30 cm** (d) 10 cm
- 18) Which of the following colours suffers maximum deviation in a prism?
- (a) yellow **(b) blue** (c) green (d) orange
- 19) A screen is placed 90cm from an object the image of the object on the screen is formed by a convex lens at two different locations separated by 20cm. Determine the focal length of the lens.
- (a) 21 cm **(b) 21.3 cm** (c) 24 cm (d) 20 cm
- 20) For a glass prism $n = \sqrt{3}$ the angle of minimum deviation is equal to the angle of prism. Find the angle of prism.
- (a) 30° **(b) 60°** (c) 45° (d) 90°
- 21) A thin prism P with angle 40 and made from glass of refractive index 1.54 combined with another thin prism P, made from glass of refractive index 1.72 to produce without deviation. The angle of the prism P₂ is _____.
- (a) 5.33° (b) 4° **(c) 3°** (d) 2.6°
- 22) A convex lens of focal length 1.0 m and a concave lens of focal length 0.25 m are 0.75 m apart. A parallel beam of light is incident in the convex lens. The beam entering at the refraction from both lenses is _____.
- (a) parallel to principal axis** (b) convergent (c) divergent (d) none of these.
- 23) Sun is visible a little before the actual sunrise and until a little after the actual sunset this is due to _____.
- (a) total internal reflection (b) reflection **(c) refraction** (d) polarisation
- 24) Which colour of light has the highest speed?
- (a) Violet (b) Red (c) Green **(d) All have same speed**
- 25) Photo electric cell or photo cell is a device which converts
- (a) light energy into electrical energy** (b) electrical energy into light energy (c) electrical energy into photons
(d) light energy into photons
- 26) When two monochromatic lights of frequency, ν and $\frac{\nu}{2}$ are incident on a photoelectric metal, their stopping potential becomes $\frac{V_s}{2}$ and V_s respectively. The threshold frequency for this metal is

- (a) $2v$ (b) $3v$ (c) $\frac{2}{3}v$ (d) $\frac{3}{2}v$

27) Two light waves from slit S_1 and S_2 on reaching points P and Q on a screen in Young's double slit experiment have a path difference zero and $\frac{\lambda}{4}$ respectively. The ratio of light intensities at P and Q will be _____.

- (a) 4 : 1 (b) 3 : 2 (c) $\sqrt{2} : 1$ (d) **2 : 1**

28) An astronomical telescope has objective and eye-piece of focal length 40 cm, 4 cm respectively. To view an object 200 cm away from the objective, the lenses must be separated by a distance.

- (a) 46.0 cm (b) 50.0 cm (c) **54.0 cm** (d) 37.8 cm

29) A screen is placed 90 cm from an object. The image of the object on the screen is formed by a convex lens at two different locations separated by 20 cm. Determine the focal length of the lens.

- (a) 21 cm (b) **21.3 cm** (c) 24 cm (d) 20 cm

30) A beam of unpolarised light is incident on a reflecting glass surface at an angle of 57.5° then the angle between the reflected and refracted beam will be

- (a) 45° (b) 60° (c) **90°** (d) 30°