

SEM-II UG1 Physics Honours

Optics

There are 15 questions and each carries 2 marks.

Full Marks" 15x2=30

Speed of light in a rarer medium

- Greater than speed of light in denser medium
- Less than speed of light in denser medium
- Equal to speed of light in denser medium
- All of the above statements are defective for some reason or the other

A ray is always

- Parallel to the wavefront
- Normal to the wavefront
- Inclined to any angle to the wavefront
- Inclined to 45 degree the wavefront

Huygenen's principal shows that the

If ψ_1 and ψ_2 be the two solutions of the differential wave equations then the solution will be

- $\psi_1 + \psi_2$
- $\psi_1 \times \psi_2$
- $\frac{\psi_1}{\psi_2}$
- ψ_2 <https://youtu.be/JH5bC-SLvb4>
- None of these

Condition for good observable fringes is

- The sources must be very narrow
- The sources muse be broad
- The slit separation between the two sources should bears a definite relation
- Not dependent on any conditions.

When light is diffracted which one of the following does not changes

- Wavelength

- Frequency
- Velocity
- Amplitude

The wavefront of light coming from a distant source of unknown shape is nearly

- Cylindrical
- Spherical
- Plane
- None of these

Light waves from two coherent sources of the same intensity I interfere. The intensity of light of maxima is given by

- I
- $2I$
- I^2
- $4I$

On reflection from denser medium the path difference introduced is

- Zero
- $\lambda/2$
- λ
- 2λ

Light waves from two incoherent sources of the same intensity I interfere. The observed intensity of the maximum light is

- I
- $2I$
- Zero
- None of these.

Two coherent sources whose intensity ratio is 81:1 produce interference fringes. The ratio of maximum to minimum intensity of the fringe system is

- 9:1
- 25:16
- 16:25

- 5:4

Haidinger's fringes are the

- The fringes of equal thickness
- The fringes of equal inclination
- The fringes of equal chromatic order
- None of these

The spacing between any two consecutive dark interference fringes

- Differs by a constant additive term
- are equal
- not equal
- Differs by a constant multiplicative term

The shape of the fringes in Young's experiment in two dimensional space is

- Elliptical
- Circular
- Hyperbolic
- None of these

One can not get interference pattern if the slit separation be

- Less than the wavelength
- Greater than the wavelength
- Equal to the wavelength
- Almost zero.

The fringes of equal thickness are formed when two glass plates are kept over each other with a small gap in-between. If a parallel beam of light of wavelength 6000\AA is used and fringe separation is 3mm , then the angle between the plates (in radian)

- 5×10^{-3}
- 2×10^{-4}
- 10^{-3}
- 10^{-4}