I Mid Term Examination

***Odd*-Semester, 2017-18**

Programme: B.Tech I Year **Branch :** All **Year:** First

Subject with Code : Engineering Physics. AHP 1101

Time: 1 Hour **Max. Marks :** 15

Section A

Note: Attempt all questions. **2X3= 6**

1. Why two independent sources of light of same wavelength cannot show interference? Discuss the conditions for sustainable interference.
2. If in an interference pattern, the ratio between maximum and minimum intensities is 49:1, find the ratio between the Amplitudes of the two interfering waves.
3. Light of wavelength 5500 Å falls normally on a slit of width 22.0×10^{-5} cm. Calculate the angular position of the first two minima on either side of the central maximum.

Section B

Note: Attempt all questions. **3X3= 9**

1. In Young's double slit experiment the slits are 0.5 mm apart and interference is observed on a screen placed at a distance of 100 cm. from the slit. It is found that the 9^{th} bright fringe is at a distance of 10 mm from the 2^{nd} dark fringe from the centre pattern. Find the wavelength of light used in the experiment.
2. Drive an expression for resultant intensity of principal maxima in diffraction pattern obtained due to a plane transmission diffraction grating. Also write the conditions for the direction of principal maxima and minimum intensity.
3. Discuss theoretically the superposition of ordinary and extra-ordinary light waves of the same frequency when their optical vectors are mutually perpendicular.

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