KEC

K Education Centre

AS Waves and Optics -1

Refraction and Interference

Assignment Questions

Waves and Optics -1 :

Q1 : Light ray in water of refractive index 1.33 directed at an angle of incidence of 50^0 at a thick glass plate of refractive index 1.52. Calculate the angle of refraction of light ray.

Q2: Explain what is monochromatic light?

Q3 : Explain why it's better to pass the light from a single source through two slits , rather than use of two separate light sources.

Q4 : Why working with lasers can be dangerous ? Suggest some precautions that should followed by anyone working with the lasers.

Q5 : An interference pattern of evenly spaced bright and dark fringes is produced. A student measures fringe spacing to be 1.3 mm . The laser light has a wavelength of 530 nm and the separation between two slits is 1.0 mm. Calculate the distance from the slit to the screen.

Q6 : Optical fibres are used to transmit digital signals. These signals can suffer from degradation. Describe the signal degradation that can happen inside the optical fibre.

Q7 : A laser light of wavelength 640 nm incident on pair of slits produces an interference pattern in which the bright fringes are separated by 7.2 mm. Calculate the wavelength of another source of light which produces interference fringes separated by 8.1 mm using same arrangement.

Q8 : What is the effect on the interference pattern in young's double slit experiment when screen is moved closer to slits. Explain your answer.

Q9 : State what are the effects of following operations on interference fringes in Young's double slit experiment.

a) Screen is moved away from the plane of slits.

b) The monochromatic source of light is replaced by monochromatic source of light with shorter wavelength.

c) Width of source slit is made wider

d) Monochromatic source is replaced by a white light