**NUMERICAL OF PHYSICS**

**FOR 12TH CLASS**

**LIGHT**

Q1—The angle of prism is 5˚. What will be its refractive index if deviation of ray is 2.5˚? (1) mark

Q2­­­­—if the minimum deviation produced by a prism of refractive angle 60˚ is 30˚, then calculate the refractive index of the material of the prism.

Q3—calculate the distance between a convex lens and a convex mirror . if an object kept at a distance of 40 cm from the lens forms an image which coincides with the object .the focal length of lens and mirror are respectively 15cm and 10cm. (3) marks. Ans—4cm

Q4—when an object is kept at a distance of 15 cm from a lens then its virtual image is formed at a distance of 10 cm from it .what is the nature of the lens ? calculate its focal length. (2) marks ans-- -30cm

Q5—two lenses of power -1D & 2D are placed in contact . calculate the focal length & nature of the equivalent lens formed by their combination. (2) marks ans—100cm

Q6—the focal length of objective & eye piece of an astronomical telescope are respectively 75cm & 5cm .calculate its magnifying power if it is in normal adjustment for distant object. (2) mark ans—15

Q7—light from sodium vapour λ=5896A˚ falls on two narrow slits .2cm apart .calculate the fringe width if screen .is 1m away. (2) marks ans--2 .948×$10^{-4}$m.

Q8—light from a narrow slit falls on a straight edge placed at a distance .6m from slit .the diffraction pattern is obtained on screen at a distance of .8 m from the edge . calculate the distance of 1st dark band if $λ$=6000A˚ (2) marks ans—1.49$×10^{-3}$m.

Q9—A compound microscope uses an objective lens of focal length 4 cm and eyepiece lens of focal length 10 cm . an object is placed at 6 cm from the objective lens. Calculate the magnifying power of the compound microscope . also calculate the length of the microscope. (3) marks

 EM WAVES, X-RAYS,CATHODE RAYS

Q11-AN electron beam of velocity 3$×10^{7}$m/sec travels through a circular path of radius .1m &passes through an electric field of strength 3v/cm .calculate e/m of electron. (2) marks ans --3$×10^{13}$c/.kg

Q12—calculate the debroglie wavelength associated with an electron accelerated through a p.d of 100 volt. (2) marks ans –1.22$×10^{-10}$m.

Q13—caculate the wavelength of the em radiation so that a photon in the beam may have same momentum as an electron which is moving with a speed of 7.28$×10^{4}$m/sec. (2) marks ans ---100A˚.

Q14—an x-ray operated at 60 kv . calculate the wavelength of the x- ray produced. (1) mark ans--.2069 A˚.