

- 2 (a) Obtain the equation for refractive index of liquid using Newton's ring. 8
- OR**
- (a) Describe advances in Holography and write in detail applications of Holography. 8
- (b) A beam of monochromatic light of wavelength $5.82 \times 10^{-7} \text{ m}$ falls normally on a glass wedge with the wedge angle 20 seconds of an arc. If the refractive index of glass is 1.5, find the number of dark fringes per cm of the wedge length. 4
- OR**
- (b) Newton's ring are observed in reflected light of $\lambda = 6000 \text{ \AA}$. The diameter of the 8th dark ring is 0.47 cm. Find the radius of curvature of the lens and the thickness of the air film. 4
- 3 (a) State and prove Ampere's integral law. Obtain equation $\nabla \times B = \mu_0 j$. 8
- OR**
- (a) Describe in detail the construction and working of a tangent galvanometer. Show that it is most sensitive when the deflection is 45° . What are its limitations? 8
- (b) Calculate the force per kilometre between two conductors separated by 0.7 m and carrying a current of 6 A? 4
- OR**
- (b) A rectangular coil of sides 8 cm and 6 cm having 2000 turns and carrying a current of 200 mA is placed in a uniform magnetic field of 0.2 T directed along the positive x-axis. What is maximum torque the coil can experience? 4
- 4 Write short notes on any two : 12
- (1) Seeback effect,
 - (2) Peltier effect,
 - (3) Thomson effect,
 - (4) Merits and demerits of moving coil galvanometer.