Attempt all the questions and all the questions carry equal marks.

Q:1. Explain the Fermat’s principle. Use it to explain the reflection at the convex and concave surfaces.

Q:2. How to experimentally find out the radius of curvature of a given plane-convex lens with the help of Newton's fringes. Explain?

Q:3. Deduce an expression for the intensity distribution of diffraction from a plane transmission grating. Obtain the conditions necessary for the maxima and minima.

Q:4. What is the difference between polarized and un-polarized light. Explain the plane polarized, circularly polarized, and elliptically polarized lights.

Q:5. What is laser? Explain the necessary conditions required for laser action and how can they be obtained?
*Attempt all the questions and all the questions carry equal marks.

Q:1. Define the electric dipole. Derive the expression for electric field due to dipole in (i) end on position and (ii) broad side on position.

Q:2. Write the bio-savart law and derive the expression for magnetic field at the centre of a current carrying circular coil.

Q:3. Derive the expression of charging and discharging of a condenser in C-R circuit?

Q:4. Draw the figure and explain the mechanism of cathode ray oscilloscope or CRO?

Q:5. Write the Maxwell’s equation and derive also.