[Total No. of Ques.- 2] Seat No: [Total No. of Pages: 1]

G H Raisoni College of Engineering and Management, Pune.

(An Empowered Autonomous Institution affiliated to Savitribai Phule, Pune University)

Department of First Year B. Tech

Term-II (2024-2025)

CAE-I

Engineering Physics (23UBSL1204)

[Time: 1 Hours] [Max. Marks: 20]

Instructions to the candidates:

1) *All questions compulsory.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*

Q. No	Sub Que		CO	Mar	BL
1	a)	Prove that electron follows a parabolic path when it passes through a transverse uniform electric field.	CO1	[5]	L3
		OR			
	b)	State and prove Bethe's law.	CO1	[5]	L2
	c)	Draw a neat labelled block diagram of CRO. Illustrate any one application of CRO.	CO1	[5]	L3
		OR			
	d)	Compare between electron lens and optical lens. (Any two points) An electron is accelerated through a potential difference of 5 kV and enters a uniform magnetic field of 0.02 T acting normal to the direction of electron motion. Determine the radius of the path.	CO1	[5]	L2
2	a)	Obtain the equation of optical path difference between the reflected rays, when the monochromatic light is incident on optical thin film of uniform thickness. Also derive conditions of constructive and destructive interference.	CO2	[5]	L2
		OR			
	b)	Explain the concept of wedge shaped film. With the help of neat diagram discuss in short interference in reflected rays over wedge shaped film. Write equation of path difference and conditions for constructive and destructive interference.	CO2	[5]	L3
	c)	Explain the term fringe width.	CO2	[5]	L3
		Fringes of equal thickness are observed in a thin glass wedge of refractive index 1.52. The fringe spacing is 1 mm and wavelength of light is 5900 Å. Calculate the angle of wedge in seconds of an arc.			
		OR			
	d)	Explain how the phenomenon of interference is utilized in testing the optical flatness of surface.	CO2	[5]	L3