Roll No	

Tatyasaheb Kore Institute of Engineering & Technology, Warananagar
(An Autonomous Institute)
F.Y. B. Tech (Sem-I), In Semester Examination –I, Sept. 2023

ENGINEERING PHYSICS

Day and Date: Monday, 25/09/2023 **Marks: 30**

Time : 9:15 am to 10:45 am

Instructions: i) Use of non-programmable calculator is allowed.
ii) Figures to the right indicate full marks.

		Unit No	CO	marks
Q.1	**Attempt any 3 of the following questions.**			
a)	Explain De-Broglie's concept of radiation and derive an expression for De-Broglie's wavelength of light particles.	1	1	**5**
b)	State and explain the properties of the matter wave.	1	1	**5**
c)	X-rays with a wavelength of 1 A^0 are scattered from a carbon block and the scattered radiation is viewed at angle 90^0 to the incident beam. Find the Compton shift and the kinetic energy imparted to the recoiling electron.	1	1	**5**
d)	Calculate the de-Broglie wavelength of (i) a ball of mass 20 kg moving with speed of 5 m/s and (ii) an electron traveling with speed of 10^6 m/s.	1	1	**5**
Q.2	**Attempt any 3 of the following questions.**			
a)	Discuss the seven types of crystal systems. How are they different from each other?	2	1	**5**
b)	What are Miller Indices? How can they be determined for a particular family of planes?	2	2	**5**
c)	An element has an atomic weight and density 60 and 6.23 gm/cm^3 respectively. Find the crystal structure and atomic radius, if the lattice parameter is 4 A^0.	2	2	**5**
d)	Calculate the packing factor for aluminum metal having FCC lattice, if its density is 2700 kg/m^3 and atomic weight is 26.98.	2	2	**5**

BEST LUCK