Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Summer Examination-2022

Subject Name : Elements of Modern Physics

Subject Code : 4SC03EMP1 **Branch: B.Sc. (Physics, Chemistry)**

Semester : 3 **Date : 29/04/2022** **Time : 02:30 To 05:30** **Marks : 70**

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a)	List the states of matter.	**01**
b)	What is the value of Planks constant?	**01**
c)	What is conduction band?	**01**
d)	Define valence band.	**01**
e)	What is Crompton scattering?	**01**
f)	What do you mean by Photon?	**01**
g)	What is Photoelectric effect?	**01**
h)	State the Heisenberg uncertainty principle.	**01**
i)	Name the constituents of nucleus.	**01**
j)	Define interference.	**01**
k)	What do you mean by binding energy?	**01**
l)	What is nuclear force?	**01**
m)	What do you mean by quantum mechanical tunneling?	**01**
n)	What are gamma rays?	**01**

Attempt any four questions from Q-2 to Q-8

Q-2 **(14)**

What do you mean by matter wave? Explain De Broglie wavelength with suitable diagram with necessary formulations.

Q-3 **(14)**

Explain Davisson German experiment in context of wave nature of electron.

Q-4 **(14)**

Write a note on Semi Empirical Mass Formula and write necessary formulation.

Q-5			**(14)**
		Explain Rutherford's experiment with necessary diagram, its interpretation of structure of atom with drawbacks.	
Q-6		**Attempt all questions**	**(14)**
	a)	What is Schrodinger wave equation and explain its usefulness.	**06**
	b)	Explain in detail the meaning of normalization and probability.	**08**
Q-7			**(14)**
		Write a note on two slit experiment with necessary diagram.	
Q-8			**(14)**
		What do you mean by superposition of waves? Explain superposition of two waves with necessary diagram and formulation.	