Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Elements of Modern Physics
Subject Code: 4SC03EMP1 **Branch: B.Sc. (All)**
Semester: 3 **Date: 12/12/2018** **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) What is a spectrum?
b) Explain three state of matter.
c) What is valence band and conduction band?
d) Define Photons.
e) What is interference phenomenon?
f) What is diffraction?
g) What is the velocity of light?
h) What is nucleus?
i) What is binding energy?
j) What is n momentum operator?
k) Explain physical interpretation of wave function?
l) What are gamma rays?
m) What is Rutherford model?
n) What is nuclear force?

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

Q-2 **Attempt all questions** **(14)**
(a) What is matter wave? Explain De Broglie wavelength with suitable figure. **7**
(b) What is the wave nature of electron? Explain Davisson German experiment. **7**

Q-3 **Attempt all questions** **(14)**
(a) What is the energy level? Explain the Balmer and Paschen series for emission of spectrum. **7**
(b) Explain the wave particle duality nature. How to do position measurement Gamma ray microscope. **7**

Q-4 **Attempt all questions** **(14)**
(a) Explain Heisenberg uncertainty principle, draw particle trajectory of electron. **7**
(b) What is the size and structure of atomic nucleus explain briefly. **7**

Q-5 **Attempt all questions** **(14)**
(a) What is the semi empirical mass formula explains. **7**
(b) What is the binding energy, why its knows as separation energy explain. **7**

Q-6		**Attempt all questions**	**(14)**
	(a)	Explain two slit interference phenomenon experiment with photons.	**7**
	(b)	Explain superposition principle for two or more waves.	**7**
Q-7		**Attempt all questions**	**(14)**
	(a)	What is Schrodinger wave equation? Why it's useful.	**7**
	(b)	What is the meaning of normalization and probability explains?	**7**
Q-8		**Attempt all questions**	**(14)**
	(a)	What is quantum scattering? How it's useful.	**7**
	(b)	What is Eigen values? Explain quantum dot with example.	**7**