C.U.SHAH UNIVERSITY Summer Examination-2019

Subject Name: Elements of Modern Physics Subject Code: 4SC03EMP1 Semester: 3 Date: 27/03/2019

Branch: B.Sc. (All) 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 the value of Plank constant?	
	b)	What is three state of matter?	
	c)	What is semiconductor?	
	d)	Define Photons and phonons.	
	e)	How many types of interference.	
	f)	What is binding energy?	
	g)	What is the velocity of light in m/s?	
	h)	What is scattering phenomenon?	
	i)	What is kinetic energy?	
	j)	What is momentum?	
	k)	Which type radiation emit by body at low temperature?	
	l)	What are X rays?	
	m)	What is atomic weight?	
• • •	n)	What is work function?	
Attem	ipt any f	our questions from Q-2 to Q-8	
Q-2		Attempt all questions	(14)
	(a)	Explain the Photoelectric effect with figure of experimental arrangement.	7
	(b)	What is Compton effect? Explain this phenomenon by scattering from a cubic	7
		crystal.	
Q-3		Attempt all questions	(14)
X ·	(a)	What is the energy level? Explain the Balmer and Paschen series for emission of	7
		spectrum.	
	(b)	An electron has a de Broglie wavelength of $2x10^{-12}$ m, find its kinetic energy	7
Q-4		Attempt all questions	(14)
•	(a)	What is the wave particle duality, Explain?	7
	(b)	What is the NZ graph, explain with suitable graph?	7
Q-5		Attempt all questions	(14)



	(a) (b)	Explain the nature of nuclear forces.	7
	(b)	Explain the estimation of minimum energy confining particle by uncertainty rule.	1
Q-6		Attempt all questions	(14)
	(a)	What is interference? Explain the types of interference in terms of maxima and minima.	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)	Explain the physical interpretation of wave function.	7
Q-8		Attempt all questions	(14)
	(a)	What is tunneling of particles across the one rectangular potential barrier?	7
		Explain	
	(b)	What is quantum dots? Explain quantum dot with example.	7

