Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name :Modern Physics
Subject Code :4SC03PHE1 **Branch :B.Sc. (All)**
Semester : 3 **Date :27/03/2019** **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 beam? 01
b) What do mean by stress? 01
c) What are you meant by phase space? 01
d) Distinguish streamline and turbulent flow. 01
e) Define: fluorescence. 01
f) Write statement of Liouville's theorem. 01
g) Define: Microscopic state. 01
h) What is spinning electron? 01
i) Write the difference between normal and anomalous Zeeman effect. 01
j) What is line spectrum? 01
k) Write expression of Bragg's law. 01
l) What is Paschan Back effect? 01
m) How critical velocity is defined? 01
n) What is Auger effect? 01

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

Q-2 **Attempt all questions** **(14)**

a) Discuss Michelson-Morley experiment. 07
b) Explain in detail Lorentz transformation with its conclusion. 07

Q-3 **Attempt all questions** **(14)**

a) Derive the formula of bending moment of a beam with diagram. 07
b) Derive the Poiseuille's equation for the liquid flow through a tube with diagram. 07

Q-4 **Attempt all questions** **(14)**

a) Explain Reynolds's number. Write its physical significance. 05
b) Explain j-j coupling. 04
c) Write short note on Newton's law of viscous flow. 05

Q-5		**Attempt all questions**	**(14)**
	a)	Describe microcanonical ensemble.	05
	b)	Discuss emission spectra.	04
	c)	Explain equal a priori probability.	05
Q-6		**Attempt all questions**	**(14)**
	a)	Describe briefly production of X-ray with neat and clean diagram.	07
	b)	Derive the formula of specific heat at constant volume.	07
Q-7		**Attempt all questions**	**(14)**
	a)	What is L-S coupling? Discuss briefly with suitable example.	07
	b)	Briefly write about quantum numbers and their physical interpretation.	07
Q-8		**Attempt all questions**	**(14)**
	a)	Write short note on Moseley's law.	04
	b)	Explain Galilean transformation. Discusshow Newton's law is invariant under this transformation.	05
	c)	Explain continuous X-ray spectra with neat and clean diagram.	05