Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Modern Physics

Subject Code : 4SC03PHE1 **Branch : B.Sc. (All)**

Semester : 3 **Date : 05/05/2016** **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 cantilever? 01
b) Define: beam. 01
c) Define bending moment of beam. 01
d) What is streamline flow? 01
e) What is turbulent flow? 01
f) Define: fluorescence. 01
g) What is Paschan Back effect? 01
h) Define: Microscopic state. 01
i) What is spinning electron? 01
j) Write the difference between normal and anomalous Zeeman effect. 01
k) Write statement of Lioville's theorem. 01
l) Write expression of Bragg's law. 01
m) What is line spectrum? 01
n) What is Auger effect? 01

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

Q-2 **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-3 **Attempt all questions** **(14)**

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

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

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

Q-5		**Attempt all questions**	**(14)**
	a)	Explain microcanonical ensemble.	05
	b)	Explain equal a priori probability.	05
	c)	Discuss emission spectra.	04
Q-6		**Attempt all questions**	**(14)**
	a)	Explain in detail 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)	Explain in detail L-S coupling.	07
	b)	Explain in detail quantum numbers and their physical interpretation.	07
Q-8		**Attempt all questions**	**(14)**
	a)	Explain continuous X-ray spectra with neat and clean diagram.	05
	b)	Explain Galilean transformation. Discuss 'Newton's law are invariant under this transformation'.	05
	c)	Write short note on Moseley's law.	04