Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Physics-I
Subject Code: 4SC01PHC1 Branch: B. Sc. (All)

Semester: 1 Date: 27/04/2016 Time: 10:30 To 1:30 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) Give the statement of Hooks law.
b) Define alternating current.
c) Define frequency.
d) Write Kepler's first law of planetary motion.
e) What is Piezoelectric effect?
f) Write the Newton's third law of motion.
g) What is the frequency range of Ultrasonic waves?
h) State Newton's laws of universal gravitation.
i) Define conservative force.
j) What is elastic collision?
k) Define: Torque
l) State the definition and unit of stress.
m) What is multimeter? Give its applications.
n) Give the statement of Norton's theorem.

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

Q-2 Attempt all questions (14)

a) State and Explain the law of conservation of linear momentum. **05**
b) Show that torque is the product of moment of inertia and angular acceleration. **05**
c) Give application of Ultrasonic waves. **04**

Q-3 Attempt all questions (14)

a) What is escape velocity? Obtain its formula. **05**
b) Write a short note on disappearing filament optical pyrometer. **05**
c) State and prove the Work Energy Theorem. **04**

Q-4 Attempt all questions (14)

a) Explain production of ultrasonic waves by magnetostriction oscillator with its principle, construction, circuit diagram, working, merits & demerits. **07**

	b)	What is collision? What are elastic and inelastic collision? Obtain expression for the final velocity of bodies undergoing elastic collision.	**07**
Q-5		**Attempt all questions**	**(14)**
	a)	Gives the statement of Kepler's laws of planetary motion and prove it.	**05**
	b)	Define : Young's Modulus, Rigidity Modulus & Bulk Modulus, Poisson's ratio and derive the relation between Y,K and σ.	**07**
	c)	Give statement of Newton's law of cooling.	**02**
Q-6		**Attempt all questions**	**(14)**
	a)	What do you understand by root mean square (rms) value of current? Derive expression of it.	**05**
	b)	Discuss charge and discharge of a capacitor connected in series with a resistance and a d-c source.	**06**
	c)	A generator having 50Ω internal resistance produce 100V.Find the power delivered to a load resistance of 200Ω.	**03**
Q-7		**Attempt all questions**	**(14)**
	a)	Discuss the condition for resonance in a series L-C-R circuit. What is quality factor?	**06**
	b)	Explain in details Thevenin's theorem.	**05**
	c)	A load of 1Kg. produces an extension of 1mm in a wire of 3 meters in length and 1mm in diameter. Calculate Young's modulus of the wire.	**03**
Q-8		**Attempt all questions**	**(14)**
	a)	Write a short note on Fery's total radiation Pyrometer.	**05**
	b)	Define centre of mass of a body and a system of particles.	**05**
	c)	Explain radius of gyration.	**04**