Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name: Physics-I
Subject Code: 4SC01PHC1 **Branch: B.Sc. (All)**
Semester: 1 **Date:19/03/2019** **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)	Write Newton's law of universal gravitation.	01
	b)	Write value and unit of the universal gravitational constant$G$.	01
	c)	Write the accepted value and unit of Acceleration due to gravity (g).	01
	d)	Give the formula of Force according to Newton's law. Give its unit.	01
	e)	What is the difference between heat and temperature?	01
	f)	Define infrasonic waves.	01
	g)	What are the frequency limits of the ultrasonic waves?	01
	h)	What is Hook's law?	01
	i)	What do you mean by the conservation of energy?	01
	j)	Define the terms: Frequency. What is its unit?	01
	k)	Define: Radius of Gyration giving its unit.	01
	l)	Define constant current source in a network circuit.	01
	m)	Define constant voltage source in a network circuit.	01
	n)	Name the physical quantities measured by a Multimeter.	01

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

Q-2		**Attempt all questions**	**(14)**
	(A)	What is a Satellite? Describe its escape velocity and time period.	**07**
	(B)	Write the statements of Kepler'sthree laws of planetary motion. Prove any one of them by deriving necessary formula of expression.	**07**
Q-3		**Attempt all questions**	**(14)**
	(A)	Describe Celsius, Fahrenheit and Kelvin temperature measurement scales giving their transformation formulae.	**07**
	(B)	Discuss PRT (Platinum Resistance Thermometer) giving Figure, Principle, Construction, Working and applications with advantages and limitations.	**07**
Q-4		**Attempt all questions**	**(14)**
	(A)	Name any two methods for production of Ultrasonic Waves. Discuss any one of them.	**07**
	(B)	Write a detailed note on various applications of Ultrasonic waves.	**07**

Q-5		**Attempt all questions**	**(14)**
	(A)	Distinguish between Longitudinal Waves and Transverse Waves	**04**
	(B)	Write only statements of Newtonian laws of motion.	**03**
	(C)	Discuss the "Work – Energy" theorem and derive necessary formula.	**07**
Q-6		**Attempt all questions**	**(14)**
	(A)	Define different types of Stresses and Strains giving their formula and units.	**04**
	(B)	Briefly explain Young's, Bulk and Rigidity moduli of elasticity.	**07**
	(C)	Obtain Young's modulus of a 300 cm long metal wire of diameter 0.9 mm experiencing elongation of 0.09 mm by 9 kg load. (g = 9.81 m/s^2)	**03**
Q-7		**Attempt all questions**	**(14)**
	(A)	Briefly discuss the experiment how Moment of Inertia of a Fly-Wheel is measured? Draw figure and derive necessary formula.	**07**
	(B)	The resistance of a platinum wire of a PRT at the ice point is 3 Ω and at the boiling point 3.54 Ω. When this thermometer is inserted in a hot bath, the resistance of the platinum wire is found 3.81 Ω. Calculate the temperature of the bath.	**04**
	(C)	Obtain acceleration due to gravity g of a place where a simple pendulum of length 100 cm performs 30 oscillations in a minute.	**03**
Q-8		**Attempt all questions**	**(14)**
	(A)	Alternating emf is applied to a circuit having inductance, capacitance and resistance in series. Derive the expression for current and discuss the three cases.	**07**
	(B)	Name any three network theorems. State and prove maximum power transfer theorem and give its significance.	**07**