C.U.SHAH UNIVERSITY
Summer Examination-2017

Subject Name: Physics-I

Subject Code: 4SC01PHC1   **Branch: B.Sc. (All)**

Semester: 1   **Date: 28/03/2017**   **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)	Write Kepler's first law of planetary motion.	1
b)	What is the frequency range of Ultrasonic waves?	1
c)	What is meant by the Specific heat of Substance?	1
d)	What is Piezoelectric effect?	1
e)	Define conservative force.	1
f)	Give the Definition of Torque in a rotational motion.	1
g)	Define the term: Alternating Current.	1
h)	Define Moment of Inertia.	1
i)	What is collision?	1
j)	What is Multimeter? Give its application.	1
k)	Write the Newton's third law of motion.	1
l)	Give the statement of Thevenin's theorem.	1
m)	What are the units of emf and self inductance?	1
n)	Define the term: Amplitude.	1

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

Q-2	**Attempt all questions**	**(14)**
a)	Explain production of ultrasonic waves by magnetostriction oscillator with its principle, construction, circuit diagram, working, merits & demerits.	**7**
b)	What do you understand by root mean square value of current? Derive expression for it.	**7**

Q-3	**Attempt all questions**	**(14)**
a)	Define Torque and angular momentum and prove that Torque is the rate of change of angular momentum.	**7**
b)	What is collision? What are elastic and inelastic collision? Obtain expression for the final velocity of bodies undergoing elastic collision.	**7**
Q-4	**Attempt all questions**	**(14)**
a)	State the differences between the transverse and longitudinal waves.	**5**
b)	State and Explain the law of conservation of linear momentum.	**5**

	c)	Write the applications of the ultrasonic waves.	**4**
Q-5		**Attempt all questions**	**(14)**
	a)	Explain in details maximum power transfer theorem.	**5**
	b)	Discuss the condition for resonance in a series L-C-R circuit. What is quality factor?	**5**
	c)	Explain about the Bulk modulus.	**4**
Q-6		**Attempt all questions**	**(14)**
	a)	What is a linear restoring force? Derive an expression for the potential energy of a spring.	**7**
	b)	What is Pyrometer? Give their types. Explain Fery's total radiation pyrometer.	**7**
Q-7		**Attempt all questions**	**(14)**
	a)	What is Escape velocity? Derive its formula.	**5**
	b)	The resistance of a platinum wire of a PRT at the ice point is 4Ω and at the boiling point 4.4Ω. When this thermometer is inserted in a hot bath, the resistance of the platinum wire is found 4.75Ω. Calculate the temperature of the bath.	**5**
	c)	Prove the relations $K=Y/3(1-2\sigma)$ and $Y=9\eta k/3k+\eta$.	**4**
Q-8		**Attempt all questions**	**(14)**
	a)	Explain Compound pendulum with neat and clean diagram. Also derive formulla for the same.	**7**
	b)	Write a short note on Disappearing filament optical pyrometer.	**7**