

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.
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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 formula for the same.	7
	b)	Write a short note on Disappearing filament optical pyrometer.	7

