C.U.SHAH UNIVERSITY
Winter Examination-2018

Subject Name : Physics-I

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

Semester : 1   Date : 03/12/2018   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) Give the statement of gravitational law.
b) Define escape velocity.
c) What do you mean by the condition of weightlessness?
d) Give the value of acceleration due to gravity 'g'.
e) What is the use of a pyrometer?
f) Give at least one difference between musical sound and noise.
g) State Newton's third law of motion.
h) Give the statement of Hooke's law.
i) Define moment of inertia.
j) What does Norton's theorem refer to?
k) Mention any two uses of multimeter.
l) Give the difference between an ac and dc source.
m) What is Doppler effect?
n) What do you mean by a chassis?

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

Q-2	**Attempt all questions**	**(14)**
a)	Derive the expression for potential and field at a point P outside a solid sphere.	**(08)**
b)	State and prove Kepler's laws of motion.	**(06)**
Q-3	**Attempt all questions**	**(14)**
a)	Explain with proper diagram the principle construction and working of a platinum resistance thermometer.	**(07)**
b)	State Newton's law of cooling.	**(01)**
c)	Explain in detail the Fery's total radiation pyrometer.	**(06)**
Q-4	**Attempt all questions**	**(14)**
a)	Write a note on Kundt's tube. Highlight its importance.	**(07)**
b)	Explain the production of ultrasonic waves based on the principle of piezoelectric effect.	**(07)**
Q-5	**Attempt all questions**	**(14)**
a)	State and prove the work energy theorem.	**(06)**

	b)	Explain the concept of center of mass for a two body system.	**(06)**
	c)	What do you mean by conservation of linear momentum?	**(02)**
Q-6		**Attempt all questions**	**(14)**
	a)	Using the concept of stress and strain, explain young's modulus, bulk modulus and modulus of rigidity.	**(07)**
	b)	Derive the relation between torque and angular momentum.	**(07)**
Q-7		**Attempt all questions**	**(14)**
	a)	Give a brief account on the resonance condition in a LCR circuit. Also define quality factor.	**(08)**
	b)	Explain how current builds up in an LR circuit.	**(06)**
Q-8		**Attempt all questions**	**(14)**
	a)	State and prove Thevenin's theorem.	**(07)**
	b)	Explain the concept of maximum power transfer theorem using proper circuit diagrams.	**(07)**