

**SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)**  
**Ph D ENTRANCE TEST**

**The Sample questions of Physics**

Q.N.	Question	Option 1	Option 2	Option 3	option 4	Answer
1	The wave associated with electron is	UV wave	Plasma wave	matter wave	Cosmic wave	option 3
2	A free particle is moving in + x direction with a linear momentum p. The wave function of particles is normalized in a length 2L is	$\frac{1}{\sqrt{2L}} \sin \frac{2\pi p}{h} x$	$\frac{1}{\sqrt{2L}} \cos \frac{2\pi p}{h} x$	$\frac{1}{\sqrt{2L}} e^{-\frac{2\pi p}{h} x}$	$\frac{1}{\sqrt{2L}} e^{\frac{2\pi p}{h} x}$	option 3
3	The mean internal energy of a one-dimensional classical harmonic oscillator in equilibrium with a heat bath of temperature T is	$\frac{1}{2} k_B T$	$\frac{3}{2} k_B T$	$k_B T$	$3k_B T$	option 1
4	If L = 2, and S = 1, the possible values of total spin J which is result of L-S coupling are	1, 2, 3	2, 3, 4	0, 1, 2	0, 2, 4	option 1
5	Canonical transformation in classical mechanics is a change of canonical coordinates	$(q, p, t)$ to $(Q, P, t)$ that preserve the Hamiltonian equation	$(q, p, t)$ to $(Q, P, t)$ that preserve the Lagrange's equation	$(Q, P, t)$ to $(q, p, t)$ that preserve the Hamiltonian equation	$(Q, P, t)$ to $(q, p, t)$ that preserve the Lagrange's equation	option 1