

Unit 5 - Week 4

Course outline

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Week 4

● Large Systems and Statistical Mechanics

○ Maxwell Boltzmann Statistics

○ Classical Particles and Quantum Particles

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Assignment 4

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-08-28, 23:59 IST.

1) In a large particle system, only ____ microstate is more probable. 1 point

- 4
- 2
- 3
- 1

No, the answer is incorrect. Score: 0

Accepted Answers: 1

2) Temperature, ____, and ____ are the macrostates of a large particle system. 1 point

- Volume and charge
- Charge and size
- Pressure and volume
- Volume and size

No, the answer is incorrect. Score: 0

Accepted Answers: Pressure and volume

3) In classical systems, particles are _____ in the same microstates 1 point

- Identical and indistinguishable
- Identical and distinguishable
- Only identical
- Only distinguishable

No, the answer is incorrect. Score: 0

Accepted Answers: Identical and distinguishable

4) Probability formula in Maxwell Boltzmann statics' is $\Omega = \frac{n!}{n_0!n_1!n_2!n_3!\dots n_r!} = \frac{n!}{\text{-----}}$. 1 point

$\prod_i^r = {}_0n_i$

$\sum_i^r = {}_0n_i$

$\prod_i^r = {}_0n_r$

n_r

No, the answer is incorrect. Score: 0

Accepted Answers: $\prod_i^r = {}_0n_i$

5) Partition function is a function of (i) particle density, (ii) energy. 1 point

- Only (i)
- Only (ii)
- Both (i) and (ii)
- None

No, the answer is incorrect. Score: 0

Accepted Answers: Only (ii)

6) Number of particles keeps on ____ with increase in energy of an energy level. 1 point

- Increasing
- Rising
- Decreasing
- Varying

No, the answer is incorrect. Score: 0

Accepted Answers: Decreasing

7) Arrange the following in increasing order of size scale; atom, electron, proton and neutron. 1 point

- Electron < neutron < proton < atom
- Electron < neutron \approx proton < atom
- Atom < neutron < proton \approx electron
- Electron \approx neutron < proton < atom

No, the answer is incorrect. Score: 0

Accepted Answers: Electron < neutron \approx proton < atom

8) Identical classical particles are ____ while quantum particles are ____ 1 point

- Indistinguishable, distinguishable
- Distinguishable, indistinguishable
- Identical, distinguishable
- Distinguishable, identical

No, the answer is incorrect. Score: 0

Accepted Answers: Distinguishable, indistinguishable

9) $n_i = \frac{n}{p} e^{-\epsilon_i/k_b T}$ is known as ____ 1 point

- Planck statistics
- Widemann-Fanz law
- Einstein Planck statistics
- Maxwell Boltzmann statistics

No, the answer is incorrect. Score: 0

Accepted Answers: Maxwell Boltzmann statistics

10) Particle trajectory is certain in case of ____ mechanics while it is ____ in case of quantum mechanics 1 point

- Classical, certain
- Statistical, certain
- Classical, probable
- Statistical, fixed

No, the answer is incorrect. Score: 0

Accepted Answers: Classical, probable