х reviewer4@nptel.iitm.ac.in v Courses » Statistical Mechanics FAQ Announcements Course Ask a Question Progress 品 Unit 11 - Week 9 2 Register for **Assignment 9** Certification exam 2 Due on 2019-04-03, 23:59 IST The due date for submitting this assignment has passed. Course outline As per our records you have not submitted this assignment. 1 point 1) How to access the portal If a system of ideal gas exists in the grand canonical ensemble (μ, V, T) , then we can say Prerequisite only E fluctuates in the system. Week 1 only N fluctuates in the system. Week 2 both E and N are fluctuating quantities. there are no fluctuating quantities. Week 3 No, the answer is incorrect. Week 4 Score: 0 Week 5 Accepted Answers: both E and N are fluctuating quantities. Week 6 2) 1 point Week 7 The chemical potential μ of an ideal gas in the grand canonical ensemble depends on number density ρ and temperature T. The exact relationship between them stands as Week 8 Week 9 $\square \mu = k_B T \ln (\rho \lambda^3)$ $\square \mu = k_B T \rho \lambda^3$ Ouiz : Assignment 9 $\square \mu = k_B T$ Grand Canonical Ensemble $\square \mu = k_B T e^{\rho \lambda^3}$ Ideal Gas (Grand Canonical No, the answer is incorrect. Ensemble) Score: 0 N Non - Interacting Accepted Answers: Spins in Constant Magnetic Field $\mu = k_B T \ln (\rho \lambda^3)$ Week 9 feedback 3) 1 point Statistical Mechanics For an ideal gas in the grand canonical ensemble, the chemical enthalpy of a microstate ν is Week 9 Solutions $H(\nu) = \sum_{i=1}^{N_{\nu}} \frac{p_i^2}{2m} - \mu N_{\nu}$ with $\mu \equiv$ chemical potential Week 10 Week 11 The average thermodynamic enthalpy is thus given as week 12 $3 \frac{3}{2} k_B T$ DOWNLOAD VIDEOS $\frac{Ve^{\beta\mu}}{Ve^{\beta\mu}}\left[\frac{3}{2}-\mu\right]$ Interaction Session © 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -A project of In association with Funded by National Programme on Technology Enhanced Learning Government of India

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Statistical Mechanics - - Unit 11 - Week 9



No, the answer is incorrect. Score: 0 Accepted Answers: $Ve^{\beta\mu}$ [3 $-\mu$ λ^3 $\overline{2\beta}$

4)

1 point An ideal gas of particles is in contact with a catalyst of surface area A. There are N distinct adsorption sites on the surface, and each adsorbed particle gains an energy ϵ upon adsorption. Thus we now have a two-dimensional gas in the grand canonical ensemble (μ, A, T) with the expression for particion function and mean number of adsorbed particles, respectively

$ [1 + e^{-\beta(\epsilon - \mu)}]^{\mathcal{N}} \text{ and } \mathcal{N}/[e^{\beta(\epsilon - \mu)} + 1]. $	<i>⊡</i>
$\bigcirc e^{-eta(\epsilon-\mu)\mathcal{N}} ext{ and } \mathcal{N}$	
$e^{-\beta(\epsilon-\mu)\mathcal{N}}$ and $\mathcal{N}/[e^{\beta(\epsilon-\mu)}+1]$.	
• $e^{-\beta(\epsilon-\mu)\mathcal{N}}$ and $\mathcal{N}/[e^{\beta(\epsilon-\mu)}-1]$.	<u>12</u>
No, the answer is incorrect.	
Score: 0	
Accepted Answers:	
$[1 + e^{-\beta(\epsilon-\mu)}]^{\mathcal{N}}$ and $\mathcal{N}/[e^{\beta(\epsilon-\mu)} + 1].$	

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