Department of Physics

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Subject No. PH41023(Statistical Physics-I) Tuesday 7th February, 2023
Assignment Due date : 9nd February 2023 Total Marks: 10

Assignment # 4

§1. A particle is confined to the region $x \geq 0$ by a potential which increases linearly as $u(x) = u_0 x$. The mean position of the particle at temperature T is

§2. A system of N classical non-interacting particles, each of mass m , is at a temperature T and is confined by the external potential $V(r) = \frac{1}{2}Ar^2$, (where A is a constant) in three dimensions. The internal energy of the system is

§3. Prove that

$$U = -\frac{\partial(LnZ)}{\partial\beta}$$

where U is internal energy and Z is partition function.