

In the name of God

Department of Physics  
Shahid Beheshti University

**ADVANCED STATISTICAL MECHANICS I**

**Exercise Set 6**

**(Due Date: 1400/10/03)**

1. Using micro canonical ensemble, prove equipartition theorem.
2. In canonical ensemble determine the  $\sigma_T^2 \equiv \langle (T - \langle T \rangle)^2 \rangle$  and  $\sigma_V^2 \equiv \langle (V - \langle V \rangle)^2 \rangle$ . (See arXiv:1507.05662)
3. Solve exercise of chapter 3 (R. K. Pathria): Q5, Q7, Q4, Q15, Q18, Q23, Q27, Q30, Q35, Q36, Q40, Q42

Good luck, Movahed

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