Assignment 9

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

1) Entropy can be defined as $S = -k \sum p_i \ln(p_i)$, where $p_i$ stands for:
   - degeneracy
   - probability
   - intensity
   - energy
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: probability

2) For a monatomic gas system partition function is written as $Z = \sum \Delta \text{ for the given equation}$
   - Carbonates
   - Nonmetallics
   - Insulators
   - Alloy
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: Carbonates

3) Assume a system comprising of 5 particles and the movement of those particles are restricted to two energy states only. How many macrostates is possible for this system?
   - 8
   - 6
   - 4
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: 6

4) For the system described in question 3, what would be the number of microstates corresponding to the macrostate (6, 3)? Assume that the particles are distinguishable?
   - 4
   - 5
   - 6
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: 6

5) An equilibrium with $\beta = 1$:
   - True
   - False
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: False

6) As equilibrium the number of molecules possessing energy $E_r$ is $y^{-\beta E_r}$:
   - True
   - False
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: False

7) An isolated molecular system exists in two states of equal energy. State A has high thermodynamic probability (B), whereas State B has low W. Without any external agents, a system in State B will spontaneously convert to State A:
   - True
   - False
   No, the answer is incorrect. 
   Score: 0
   Accepted Answers: True

Consider the following three cases of grid boxes. Note that it can move between and occupy any box. Calculate the thermodynamic probability (W) and entropy (S) for each case.

- Case 1: $W = 15$, $S = 2.71 k_{\text{B}}$
- Case 2: $W = 15$, $S = 2.71 k_{\text{B}}$
- Case 3: $W = 15$, $S = 2.71 k_{\text{B}}$

No, the answer is incorrect. 
Score: 0
Accepted Answers: $W = 15$, $S = 2.71 k_{\text{B}}$