

## Unit 2 - Week 0: Prerequisite

### Course outline

How does an NPTEL online course work?

#### Week 0: Prerequisite

Quiz : Assessment 0

Solution: Assignment 0

#### Week 1: Introduction of Phase Equilibria

#### Week 2: Estimation of Thermodynamic Properties

#### Week 3: Potential Energy Functions and Intermolecular Forces

#### Week 4: Molecular Theory of Corresponding States

#### Week 5: Intermolecular Interactions and E.o.S

#### Week 6: Gaseous Mixtures and Fugacity

#### Week 7: Liquid Mixtures and Fugacity

#### Week 8: Models for Activity Coefficients using Excess Gibbs Energy

#### Week 9: Vapour - Liquid Equilibria of Multicomponent Non-Ideal Systems

#### Week 10: Liquid - Liquid Equilibria of Multicomponent Non-Ideal Systems

#### Week 11: Vapour - Liquid - Liquid Equilibria of Multicomponent Non-Ideal Systems

#### Week 12: Solid - Liquid Equilibria of Non-Ideal Systems

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## Assessment 0

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

**Due on 2020-01-26, 23:59 IST.**

1) A system that does not permit transfer of matter between system and surroundings is known as

4 points

- Isolated system  
 Closed system  
 Open system  
 None of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Closed system

2) A system that permit transfer of both matter and energy between system and surroundings is known as

4 points

- Isolated system  
 Closed system  
 Open system  
 None of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Open system

3) A system that does not permit transfer of both matter and energy between system and surroundings is known as

4 points

- Isolated system  
 Closed system  
 Open system  
 None of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Isolated system

4) For a binary two-phase system at equilibrium, what is the total number intensive variables to be fixed in order to fix the intensive state of the system

4 points

- 4  
 2  
 3  
 1

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
2

5) If the direction of a process can be reversed at any point by an infinitesimal change in external conditions is known as

4 points

- Reversible  
 Irreversible  
 Partially irreversible  
 None of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Reversible

6) For an ideal gas, the internal energy is function of

4 points

- Both temperature and pressure  
 Only pressure  
 Only temperature  
 None of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
Only temperature

7) Property whose value in a prescribed state is independent of previous history of the system is known as

4 points

- State function  
 Chemical potential  
 Thermal potential  
 Mechanical potential

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
State function

8) Combined statement of 1<sup>st</sup> and 2<sup>nd</sup> laws of thermodynamics for a homogeneous closed system is?

4 points

- $dU = TdS - PdV + \sum_i(\mu_i dn_i)$   
  $dU \leq TdS - PdV$   
  $dU > TdS - PdV + \sum_i(\mu_i dn_i)$   
 None of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $dU \leq TdS - PdV$

9) Chemical potential is defined as?

4 points

- $\left[\frac{\partial H}{\partial n_i}\right]_{S,P,n_j}$   
  $\left[\frac{\partial G}{\partial n_i}\right]_{T,P,n_j}$   
  $\left[\frac{\partial U}{\partial n_i}\right]_{S,V,n_j}$   
  $\left[\frac{\partial A}{\partial n_i}\right]_{T,V,n_j}$   
 All of the above are correct

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
All of the above are correct

10) Which of the following is the Gibbs-Duhem equation?

4 points

- $dU = TdS - PdV + \sum_i(\mu_i dn_i)$   
  $dU \leq TdS - PdV$   
  $dU > TdS - PdV + \sum_i(\mu_i dn_i)$   
  $SdT - VdP + \sum_i n_i d\mu_i = 0$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $dU = TdS - PdV + \sum_i(\mu_i dn_i)$