Week 2 Assignment 2

The due date for submitting this assignment has passed. Due on 2016-02-09, 23:55 IST.

Submitted assignment

1) The equation 
\[ \frac{\partial p}{\partial T} = \frac{\Delta_{pH}}{T\Delta_{AV}} \] 
describes which of the following?

- The change in pressure with respect to temperature as a solid is converted into liquid
- The change in pressure with respect to temperature as a liquid is converted into solid
- The change in pressure with respect to temperature as a liquid and solid stay at equilibrium
- The change in pressure with respect to temperature as a solid is heated

No, the answer is incorrect.

Score: 0

Accepted Answers:
The change in pressure with respect to temperature as a liquid and solid stay at equilibrium

2) Based on fundamental equation for a change in internal energy for a closed system of constant composition, \( dU = TdS - pdV \), which of the following represents a valid Maxwell relations?

- \[ \frac{\partial T}{\partial V} = -\frac{\partial p}{\partial S} \]
- \[ \frac{\partial S}{\partial V} = -\frac{\partial V}{\partial T} \]
- \[ \frac{\partial T}{\partial p} = -\frac{\partial S}{\partial V} \]
- \[ \frac{\partial U}{\partial T} = -\frac{\partial V}{\partial S} \]

No, the answer is incorrect.

Score: 0

Accepted Answers:
3) Identify the incorrect thermodynamic relation?  

- H = U + pV 
- G = H - ST 
- U = q + w 
- dS = dq/T

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

U = q + w

4) What are the assumptions made by the clausius-clapeyron equation in 1850?  

- molar volume of liquid is negligible compared to that of the gas 
- the vapor is an ideal gas the liquid is also in equilibrium with the solid 
- above both 
- none

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

above both

5) The clapeyron equation can be used to..  

- drive the Maxwell equations 
- compute the entropy change in a chemical reaction 
- determine the enthalpy change associated with phase transitions 
- compute the relation between specific heat Cp, Cv

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

determine the enthalpy change associated with phase transitions

6) The standard enthalpy of vaporization of water, H₂O, ΔvapH = 40.7 kJ mol⁻¹ at 373 K. Assuming this value to remain constant at temperatures close to 373 K, use the Clausius-Clapeyron equation to estimate the vapour pressure of liquid water at 80°C.

- 95.8 kPa 
- 48.2 kPa 
- 100 kPa 
- 4.82 kPa

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**

48.2 kPa

7) What is the composition, in atom percent, of an alloy that contains 33 g copper and 47 g zinc?

- 51 and 49 
- 33 and 47 
- 47 and 33 
- 41.9 and 58.1

**No, the answer is incorrect.**

**Score:** 0
8) What is the composition, in weight percent, of an alloy that consists of 5 at% Cu and 95 at% Pt? 

- 5% and 95%  
- 95% and 5%  
- 1.68% and 98.32%  
- 2% and 98%  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
1.68% and 98.32%  

9) See the isomorphous diagram freedom at starred position in the following image 

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
1  

10) As shown in the binary phase diagram, an alloy with composition C₀ = 48% is cooled down from liquid to form solid. At the temperature T, Cₛ = 26%, Cₐ = 72%, the fraction of solid phase is
11. Select the composite from following-
- Nylon
- Wood
- Steel
- Mica

No, the answer is incorrect.
Score: 0
Accepted Answers: 52

12. Steel is strong because of Carbon ----
- resist motion of dislocation
- makes covalent bond
- substitute Fe
- none

No, the answer is incorrect.
Score: 0
Accepted Answers: resist motion of dislocation

13. Carbon steel is the _ _ _ _ _ _ alloy of Fe and C
- Substitutional
- Interstitial
- above both
- none

No, the answer is incorrect.
Score: 0
14. Mild steel belong to the following category.
   - Low carbon steel
   - Medium carbon steel
   - High carbon steel
   - Alloy steel

   **No, the answer is incorrect.**
   **Score: 0**

15. Gibbs energy change of mixing for an ideal solution is?
   - Greater than zero
   - Less than zero
   - 0 or greater than 0

   **No, the answer is incorrect.**
   **Score: 0**

16. The temperature of mixture of ice and liquid water decreases by adding salt to the mixture because...
   - It stabilize the water phase
   - It destabilize the water phase
   - It stabilize the ice phase
   - It destabilize the ice phase

   **No, the answer is incorrect.**
   **Score: 0**

17. At constant pressure, when NaOH dissolve in water, beaker becomes warm to touch. The enthalpy change for dissolving NaOH in water is?
   - Positive
   - Negative
   - Impossible to tell

   **No, the answer is incorrect.**
   **Score: 0**

18. In the Phase diagram below, eutectic point is?
A phase is defined as a matter with

- distinct composition
- distinct structure
- distinct structure and composition
- all of above

No, the answer is incorrect.
Score: 0
Accepted Answers:
50%

19 A phase is defined as a matter with

- distinct composition
- distinct structure
- distinct structure and composition
- all of above

No, the answer is incorrect.
Score: 0
Accepted Answers:
distinct structure
20. See the phase diagram of water. On the liquid/solid boundary line, the freedom is

- 1
- 2
- 3
- 0

No, the answer is incorrect.
Score: 0
Accepted Answers: 1