

NAME: .....

NEPTUN code: .....

1. Select the only correct answer for each question. There is no point deduction for incorrect answers.

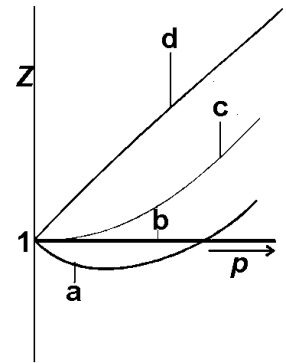
20 points

1.1. The graph on the right shows the compression factor ( $Z$ ) of a gas as a function of pressure ( $p$ ) at constant temperature. Which line represents the Boyle temperature?

- A) a    B) b    C) c    D) d    E) none of them

1.2. The same graph on the right still shows the compression factor ( $Z$ ) of a gas as a function of pressure ( $p$ ) at constant temperature. Which line shows the properties of an ideal gas?

- A) a    B) b    C) c    D) d    E) none of them



1.3. The fact that most liquids have standard molar entropies of evaporation close to each other is called...

- A) Trouton's rule    B) Dalton's law    C) Clausius equation    D) Gibbs' rule    E) none of them

1.4. Identify the process that is NOT a transport process.

- A) diffusion    B) effusion    C) heat transport    D) viscosity    E) ionic conduction

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1.20.

2. Define the following phenomena briefly (you can also include figures):

5 × 5 = 25 points

2.1. Different forms of the first law of thermodynamics:

2.2. Steam distillation:

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3. Are these true (+) or false (-)?

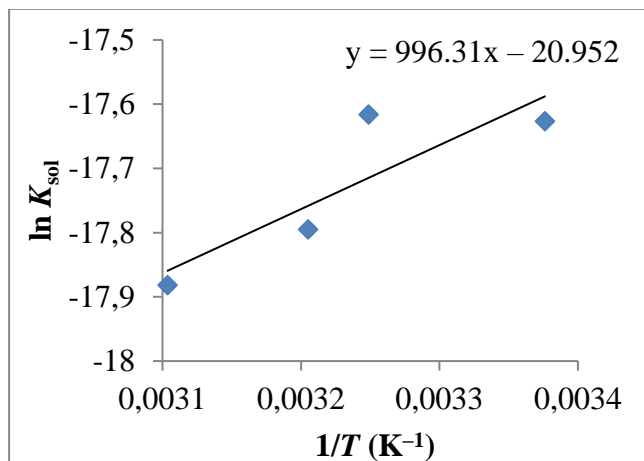
25 points

3.1. Gases have a fixed volume.	
3.2. The equation $pV = nRT$ is valid for any gas independently of the conditions.	
3.3. Mixtures of real gases behave like a single real gas.	
3.4. The compression factor of a gas is used to characterize boiling point elevation.	
⋮	
3.25.	

4. Perform the following calculations:

$3 \times 10 = 30$  points

4.1. Calculate the value of the enthalpy and entropy of dissolution of a weakly soluble salt based on the graph given below!



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