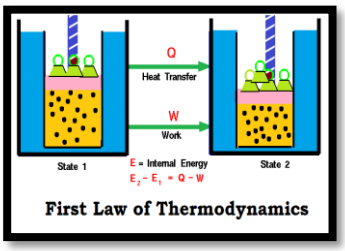
National Institute of Open Schooling
Senior Secondary Course : Chemistry
Chapter 9 : Chemical Thermodynamics
Worksheet-9



1. Explain, why NaCl(s) dissolves in water although dissolution of NaCl(s) in water is endothermic?

2. Give reason, when a piece of ice is placed on your hand, you get a cold sensation.

3. Which type of ideal gas will have the largest value for Cp – Cv?

(i) Monoatomic

(ii) Diatomic

(iii) Polyatomic

(iv) The value will be the same for all.

4. What happens to the internal energy of the system if, **(i)** Work is done on the system, **(ii)** Work is done by the system?

5. If the polymerization of ethylene is a spontaneous process at room temperature, predict the sign of enthalpy change during polymerization.

6. Which of the following are open, close or nearly isolated system?

(i). Human being

(ii) The earth

(iii) Cane of tomato soup

(iv) ice cube tray filled with water

(v) A satellite in orbit

(vi) Coffee in a thermos flask

(vii) Helium filled balloon

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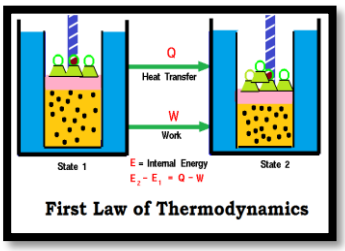

7. Why would you expect a decrease in entropy as a gas condenses into liquid? Compare it with entropy decrease when a liquid sample is converted into a solid.

8. A Russian space vehicle developed a leak, which resulted in an internal pressure drop from 1 atm to 0.85 atm. Is this an example of a reversible expansion? Has work been done?

9. Which member of each pair do you expect to have a higher entropy? Why?

(i) solid phenol or liquid phenol

(ii) 1-butanols or butane

(iii) cyclohexane or cyclohexanol

(iv) 1 mol of N_2 mixed with 2 mol of O_2 or 2 mol of NO_2

(vi) 1 mol of O_2 or 1 mol of O_3

(vii) 1 mol of propane at 1 atm or 1 mol of propane at 2 atm

10. Using the second law of thermodynamics, explain why heat flows from a hot body to a cold body but not from a cold body to a hot body.