

Thermodynamics

Std. XII
CHEMISTRY

Time: 30 mts
Max.Marks: 25

- Entropy is a _____ function.
 - State
 - Path
 - Exact
 - Inexact
- A process accompanied of increase in entropy tends to be
 - Isothermal
 - Adiabatic
 - Spontaneous
 - Non-spontaneous
- It is impossible to transfer heat from a cold body to a hot body by a machine without doing some work. This statement is
 - Kelvin statement
 - Kelvin-planck statement
 - Clausius statement
 - Planck statement
- The efficiency of a machine can be
 - 0%
 - 100%
 - > 100%
 - < 100%
- The percentage efficiency of a heat engine working between the temperatures T_1 K and T_2 K ($T_1 > T_2$) is given by
 - $\left(\frac{T_2 - T_1}{T_2}\right) \times 100$
 - $\left(\frac{T_1 - T_2}{T_1}\right) \times 100$
 - $\frac{T_1}{T_2} \times 100$
 - $\frac{T_2}{T_1} \times 100$
- The ratio of the heat involved to the temperature of the process represents
 - enthalpy function
 - free energy function
 - entropy function
 - spontaneity function
- In a reversible process, entropy of universe is
 - > 0
 - < 0
 - = 0
 - constant
- When the external pressure is less than the internal pressure of a gaseous system, the gas expands
 - Reversibly
 - Isothermally
 - Spontaneously
 - Adiabatically
- For a reversible process, Δs
 - > 0
 - < 0
 - = 0
 - constant
- Spontaneous processes are associated with increase in
 - Orderliness
 - Disorderliness
 - Pressure
 - Temperature
- Which one of the following is a state function
 - q
 - Δq
 - ΔS
 - None of these
- Liquid helium does not obey Trouton's because its
 - boiling point is OK
 - boiling point is little
 - boiling point < OK
 - melting point > OK
- Which one of the following is having a high ΔH_{vap} value
 - acetone
 - ethyl alcohol
 - CCl_4
 - CHCl_3

14. The SI unit of entropy is
 a cal | k | mol
 c J | deg | mol²
 b erg | k | mol
 d J | k | mol
15. The Gibbs free energy G is mathematically defined as
 a $G = H + TS$
 c $G = H - TS$
 b $G = S - TH$
 d $G = E - TS$
16. G is an intensive property in a/an
 a Open system
 c Closed system
 b Isolated system
 d Both b and c
17. G becomes the intensive property when _____ remains constant between initial and final states.
 a Pressure
 c Enthalpy
 b Temperature
 d Mass
18. When $\Delta G > 0$ the process is
 a Spontaneous
 c Non feasible
 b Feasible
 d Equilibrium
19. The network obtained from a system is given by
 a $w - P \Delta V$
 c $-w + P \Delta V$
 b $w + P \Delta V$
 d $-w - P \Delta V$
20. The mathematical expression used to represent the first law of thermodynamics is
 a $Q = \Delta E - w$
 c $Q = \Delta E / w$
 b $Q = \Delta E + w$
 d $Q = w \Delta E$
21. The entropy statement of IInd law of thermodynamics is
 a Entropy is a state function
 b A process accompanied by increase in entropy tends to be spontaneous
 c Entropy is a measure of randomness
 d Entropy represents the ratio of the heat involved (q) to the temperature (T) of the process
22. The amount of heat exchanged with the surrounding at constant temperature and pressure is called
 a ΔE
 c ΔS
 b ΔH
 d ΔG
23. When a liquid boils, there is
 a an increase in entropy
 b a decrease in entropy
 c an increase in heat of vapourisation
 d an increase in free energy
24. Which of the following does not result in an increase in the entropy?
 a Crystallisation of sucrose from solution
 b Rusting of iron
 c Conversion of ice to water
 d Vapourisation of camphour
25. In an adiabatic process which of the following is true?
 a $q = w$
 c $\Delta E = q$
 b $q = 0$
 d $P \Delta V = 0$