DPP-2 [Entropy(Therotical)]

"Boring lag raha? Samajh le – growth wahi hoti hai jahaan comfort nahi hota." — Weird Chemist

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Q1. Entropy means –

(1) Disorderness
(2) Randomness
(3) Orderness
(4) Both 1 & 2

Q2. Which of the following state function is not zero at standard state –

(1) Enthalpy
(2) Entropy
(3) Free energy
(4) Work

Q3. In any natural process occurring in the universe –

(1) Entropy is conserved
(2) Entropy increases
(3) Entropy decreases
(4) Entropy remains unchanged

Q4. The most random state of H_2O system is –

(1) Ice
(2) $H_2O(l)$ at 80°C ; 1 atm
(3) Steam
(4) $H_2O(l)$ at 25°C ; 1 atm

Q5. When you make ice cubes, the entropy of water –

(1) Does not change
(2) Increases
(3) Decreases
(4) May either increase or decrease depending on the process used

Q6. The least random state of H_2O is –

(1) Ice
(2) Liquid water
(3) Steam
(4) Randomness is same in all states

Q7. In which case change in entropy is negative? ***(NEET 2019)***

(1) Evaporation of water
(2) Expansion of gas at constant temperature

(3) Sublimation of solid to gas
(4) $2H(g) \rightarrow H_2(g)$

Q8. In which of the following case entropy decreases –
(1) Solid changing to liquid
(2) Expansion of a gas
(3) Crystals dissolve
(4) Polymerisation

Q9. Which has the least entropy –
(1) Graphite
(2) Diamond
(3) $N_2(g)$
(4) $N_2O(g)$

Q10. When two gases are mixed, the entropy –
(1) Remains constant
(2) Decreases
(3) Increases
(4) Becomes zero

Q11. Change in entropy is negative for –
(1) $Br_2(l) \rightarrow Br_2(g)$
(2) $C(s) + H_2(g) \rightarrow CO(g) + H_2(g)$
(3) Mg(g, 10 atm) $\rightarrow$ Mg(s, 1 atm)
(4) Fe (at 400K) $\rightarrow$ Fe (at 300K)

Q12. For which reaction from the following, ΔS will be maximum?
(1) $Ca(s) + \frac{1}{2}O_2(g) \rightarrow CaO(s)$
(2) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$
(3) $C(s) + O_2(g) \rightarrow CO_2(g)$
(4) $N_2(g) + O_2(g) \rightarrow 2NO(g)$

Q13. ΔS for the reaction $MgCO_3(s) \rightarrow MgO(s) + CO_2(g)$ will be –
(1) 0
(2) –ve
(3) +ve
(4) ∞

Q14. Change in entropy is negative for –
(1) Bromine (l) $\rightarrow$ Bromine (g)
(2) $C(s) + H_2O(g) \rightarrow CO(g) + H_2(g)$
(3) N_2(g, 10 atm) $\rightarrow$ N_2(g, 1 atm)
(4) Fe (at 400K) $\rightarrow$ Fe (at 300K)

Q15. In which reaction ΔS is positive –
(1) $H_2O(l) \rightarrow H_2O(g)$
(2) $3O_2(g) \rightarrow 2O_3(g)$

(3) $2H_2O(l) \rightarrow 2H_2O(g)$
(4) $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

Q16. Ammonium chloride when dissolved in water leads to cooling sensation. The dissolution of NH_4Cl at constant temperature is accompanied by –
(1) Increase in entropy
(2) Decrease in entropy
(3) No change in entropy
(4) No change in enthalpy

Q17. For the gas phase reaction,
$PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
Which of the following conditions are correct?
(1) $\Delta H < 0$ and $\Delta S < 0$
(2) $\Delta H > 0$ and $\Delta S > 0$
(3) $\Delta H < 0$ and $\Delta S > 0$
(4) $\Delta H > 0$ and $\Delta S < 0$

Q18. Correct option for an endothermic gaseous reaction
A + B → 3C will be –
(1) $\Delta H > 0$, $\Delta S > 0$
(2) $\Delta H > 0$, $\Delta S < 0$
(3) $\Delta H < 0$, $\Delta S > 0$
(4) $\Delta H < 0$, $\Delta S < 0$

Q19. In which of the following there is decrease in entropy –
(1) When temperature is raised from 30K to 150K
(2) When $NaHCO_3$ changes into $Na_2CO_3(s)$ and $CO_2(g)$
(3) $H_2(g) \rightarrow 2H(g)$
(4) Liquid crystallises into a solid

Q20. If equal moles of following gases are taken at constant temperature and pressure then gas of highest entropy is –
(1) He(g)
(2) $H_2(g)$
(3) $CO_2(g)$
(4) $PCl_5(g)$

Q21. Which of the following statement is correct –
(1) Entropy of egg decreases on boiling
(2) Entropy of rubber band decreases on stretching
(3) Entropy decreases during fusion of ice
(4) All of these

Q22. A boiled egg shows a/an ____ in entropy –
(1) Increase
(2) Decrease

(3) No change
(4) None of these

Q23. Considering entropy (S) as a thermodynamic parameter, the criterion for the spontaneity of any process is –

(1) $\Delta S_{system} + \Delta S_{surroundings} > 0$
(2) $\Delta S_{system} + \Delta S_{surroundings} = 0$
(3) $\Delta S_{system} > 0$ only
(4) $\Delta S_{surroundings} > 0$ only

Q24. For a spontaneous process the correct statement is –

(1) Entropy of the system always increases
(2) Free energy of the system always increases
(3) Total entropy change is always negative
(4) Total entropy change is always positive

Q25. In a spontaneous irreversible process the total entropy of the system and surroundings –

(1) Remains constant
(2) Increases
(3) Decreases
(4) Zero

Q26. The total entropy change for a system & its surroundings increases if the process is –

(1) Reversible
(2) Irreversible
(3) Exothermic
(4) Endothermic

Q27. In an irreversible process, the value of $\Delta S_{system} + \Delta S_{surr}$ is –

(1) +ve
(2) –ve
(3) Zero
(4) All of these

Q28. Entropy of an adiabatic reversible process is –

(1) Positive
(2) Negative
(3) Zero
(4) Constant

Q29. Entropy change in spontaneous adiabatic process is –

(1) Zero
(2) < 0
(3) > 0
(4) None of these

Q30. In a reversible process, the value of $\Delta S_{sys} + \Delta S_{surr}$ is –

(1) > 0
(2) < 0
(3) $= 0$
(4) All of these