1. When ice melts to water, the entropy...

   ☐ increases

   ☐ decreases

   ☐ stays the same

2. A reaction's entropy change is...

   ☐ the sum of everything

   ☐ sum of products minus sum of reactants

   ☐ sum of reactants minus sum of products

3. A reaction is thermodynamically favourable when ΔG is...

   ☐ exactly 100

   ☐ positive

   ☐ negative

4. Which quantity tells you whether a reaction is thermodynamically favourable?

   ☐ the molar mass

   ☐ ΔG

   ☐ the activation energy

5. A reaction with $\Delta G^\circ < 0$ has an equilibrium constant that is...

   ☐ greater than 1

   ☐ exactly 0

   ☐ less than 1

6. Dissolving a solid can either increase or decrease system entropy because solvent ordering also contributes.

   ☐ True ☐ False

7. For compatible amounts and conditions, linked reaction A has $\Delta G = +15$ kJ and B has $\Delta G = -40$ kJ. Find the total in kJ.

   _____

8. A galvanic cell runs on a spontaneous reaction; an electrolytic cell forces a non-spontaneous one.

   ☐ True ☐ False

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☐ True ☐ False

10. A current of 5 A flows for 200 s. The total charge (in C)?

    _____ C

1. **increases**

   Liquid water is more disordered than solid ice.

2. **sum of products minus sum of reactants**

   Multiply every S° by its stoichiometric coefficient, sum each side, then subtract reactants from products.

3. **negative**

   $\Delta G < 0$ means the reaction is favourable.

4. ΔG

   ΔG decides favourability; activation energy decides speed.

5. **greater than 1**

   Negative ΔG° favours products, so $K > 1$.

6. **True**

   Solute dispersal favours higher entropy, but ordering of water around ions can outweigh it.

7. **-25**

   Add the values for the linked equations: $\Delta G_{total} = 15 + (-40) = -25$ kJ, so the overall process is favourable.

8. **True**

   That difference in drive defines the two cell types.

9. **False**

   E° is intensive (a voltage), so it does not scale with amount.

10. **1000 C**

    $Q = It = 5 \times 200 = 1000$ C.

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