Chemistry Practical Class 12 Enthalpy of neutralisation of strong acid (HCl) and strong base (NaOH) Viva Questions with Answers

Q1. Define enthalpy of neutralisation.

Answer. The enthalpy change when a base or vice versa neutralises one gram equivalent of an acid is referred to as the enthalpy of neutralisation.

Q2. What is the enthalpy of neutralisation of HCl and NaOH?

Answer. The enthalpy of neutralisation of strong acid (HCl) and strong base (NaOH) is -55.84 kJ/mol.

Q3. Why is the enthalpy of neutralisation of a strong acid with a strong base always the same?

Answer. This is because it always involves the combination of one gram equivalent of H^+ ions with OH^- ions to form unionised water molecules.

Q4. Is HCl and NaOH neutralisation exothermic or endothermic?

Answer. The reaction between HCl(aq), a strong acid, and NaOH(aq), a strong base, is exothermic in nature.

Q5. What is the enthalpy of strong acid neutralisation?

Answer. Heat is released when an acid and an alkali react, so enthalpy changes of neutralisation are always negative. The reactions involving strong acids and alkalis are always very close, with values ranging between -57 kJ/mo and -58 kJ/mol.

Q6. What causes the exothermic reaction between HCl and NaOH?

Answer. The reaction between HCl and NaOH is a neutralisation reaction that results in the formation of NaCl + H_2O. Since there is more bond formation than bond breaking in this reaction, the ΔH is negative, indicating that it is more exothermic.

Q7. Why do we calculate the heat evolved for the neutralisation of 1000 mL of a (1 M) acid by1000 mL of a (1 M) monoacidic base?

Answer. When a neutralisation reaction occurs, it is an exothermic reaction, which means that heat is released or evolved. Thus, if 1000 mL acid is neutralised by a 1000 mL monoacidic base, the nature of the reaction determines whether or not neutralisation occurred.

Q8. In comparison to the heat evolved in the neutralisation reaction between a strong acid and a strong base. Why is a lesser quantity of heat evolved when any one of the acids or the base is weak and still less when both are weak?

Answer. This is because weak bases are not completely ionised in an aqueous solution. As a result, some energy is required for their complete ionisation, so the net energy released is lower.

Q9. Why does the reaction: $H_2O(l) \rightarrow H^+(aq) + OH^-(aq)$ proceed in the forward direction with the rise in temperature of the system?

Answer. The reaction $H_2O(l) \rightarrow H^+(aq) + OH^-(aq)$ is an endothermic reaction.
Endothermic reactions are favoured as the temperature rises. An increase in temperature in an endothermic reaction favours the reaction to proceed in the forward direction.
Explanation: The reactants absorb heat. When the temperature of an equilibrium mixture rises, the rates of both reactions rise, but the rate of the endothermic reaction (the reaction that absorbs the added energy) rises faster.

Q10. What factors influence the enthalpy of neutralisation?

Answer. Three factors influence the heat change of the neutralisation reaction:

- The amount of acid and alkali.
- The acid's and alkali's basicity.
- Acid and alkali strength.

Q11. Why is the enthalpy of Neutralisation negative?

Answer. If heat is evolved, ΔH is negative; if heat is absorbed, ΔH is positive.

Q12. Do strong acids have a high ka?

Answer. A high Ka value indicates a strong acid because it indicates that the acid has been partially dissociated into its ions. A low Ka value indicates that little of the acid dissociates, resulting in a weak acid.

Q13. Why does the heat of neutralisation of a strong acid and a strong base remain constant?

Answer. The neutralisation enthalpy remains constant for a strong acid and a strong base because both acids and bases are fully ionised in a dilute solution. When an acid and an alkali react, heat is

released, so neutralisation changes in enthalpy are frequently negative. The neutralisation enthalpy remains constant for a strong acid and a strong base because both acids and bases are fully ionised in a dilute solution. When an acid and an alkali react, heat is released, so neutralisation changes in enthalpy are frequently negative.

Q14. Why is the heat energy of a neutralisation reaction involving a weak acid and a weak base less than the standard value?

Answer. The dissociation of a weak acid requires the spending of some energy. This energy is derived from the released heat of neutralisation. As a result, less heat energy is released as a result of the neutralisation of strong acid / strong base.

Q15. What is the heat of neutralisation of weak acid and a strong base?

Answer. The heat of neutralisation for weak acids and bases is pH-dependent. Some heat is required for complete dissociation in the absence of any added mineral acid or alkali. The total amount of heat evolved during neutralisation will be less.
The heat of neutralisation between weak acid and strong base is (-56.1) kJ/mole.

Q16. What kind of change is neutralisation?

Answer. Since the products (salt and water) cannot be converted back to the reactants, a neutralisation reaction is irreversible (acid and base). It is a chemical reaction that converts an acid and a base to salt and water.