Chemistry Practical Class 11 Preparation of standard solution of oxalic acid Viva Questions with Answers

Q1. What is quantitative analysis?

Answer. Quantitative analysis (QA) is a technique for understanding behaviour that employs mathematical and statistical modelling, measurement, and research. A given reality is represented numerically by quantitative analysts.

Q2. What are the formula and the basicity of hydrated oxalic acid and anhydrous oxalic acid?

Answer. The formula of oxalic acid is ($C_2H_2O_4$); its usual form is that of the crystalline hydrate, $(COOH)_2 \cdot 2H_2O$. The basicity for both the molecules is 2.

Q3. What do you mean by the basicity of an acid?

Answer. The number of hydrogen atoms in a molecule that can be ionised is referred to as an acid's basicity.

Q4. Is oxalic acid a strong acid?

Answer. As an organic acid, oxalic acid is a weak acid. Oxalic acid is known to be a soft acid. It's weaker than (water) H_3O^+ atom. But it is better than acetic acid, sulphuric acid, nitrous acid, benzoic acid, and so on.

Q5. What do you mean by a molar solution?

Answer. A molar solution is an aqueous solution containing one mole (gram-molecular weight) of a compound dissolved in one litre of solution. In other words, the solution has a molarity of 1 (1M) and a concentration of 1 mol/L.

Q6. Why is the standard solution always prepared in a volumetric flask?

Answer. A volumetric flask is used when it is necessary to know the volume of the solution being prepared precisely and accurately. Volumetric flasks have been calibrated (standardised) to specific volumes. This enables scientists to determine how much liquid is contained in a specific flask when it is filled.

Q7. What is the molar mass of the oxalic acid?

Answer. The molar mass of the oxalic acid is 126 g.

Q8. How will you prepare 250 ml of 0.05 M oxalic acid solution?

Answer. The molecular formula of solid crystalline oxalic acid is-
Its molecular mass is 126 g.
Molarity of the required solution = 0.05 M or M/20

To prepare 250ml of 0.05 M oxalic acid solution - $\frac{126 \times 250 \times 0.05}{1000} = 1.575g$
1.575 g of oxalic acid is to be dissolved in water in a 250 ml volumetric flask.

Q9. What type of substance can be used for preparing a standard solution?

Answer. A standard solution is a solution with an exactly known concentration. Dissolving a primary standard in a suitable solvent yields a standard solution (such as distilled water).

Q10. What is meant by "weighing by transfer"? When is this used?

Answer. It can be used to balance beams and springs. It means that the weight of the body has been increased by either adding mass to the body or increasing the force of gravity.

Q11. Why should weights never be touched by hands?

Answer. This leads to weighing errors because some matter may be transferred from the hand to the weight. For accurate measurements, forceps should be used to transfer weights from the weight box to the pan of the balance and a spatula should be used to transfer the reagent from the bottle onto the watch glass.

Q12. Why is distilled water always used to prepare the standard solution?

Answer. Distilled water is essentially inert, which means it contains only hydrogen and oxygen. Since distillation kills most organic matter and removes minerals from water, it is an excellent control element for science projects and laboratory tests.

Q13. What precautions to be taken while performing the experiment?

Answer. The precautions to be taken while performing the experiment are as follows-

- Weighing of oxalic acid crystals needs weights of 2g + 1g + 100mg + 5mg.
- Wash the watch glass carefully so that even a single crystal of oxalic acid is not left on the watch glass.
- The last few drops should be added using a pipette to avoid extra addition of distilled water above the mark on the neck of the measuring cylinder.
- If it is necessary to titrate oxalic acid or oxalate, add the required dilute H_2SO_4 amount and heat the flask to 60 °-70 ° C.

Q14. The standard solution of oxalic acid is used for which purpose?

Answer. The standard solution of oxalic acid can be used to determine the unknown concentration of an alkali solution.

Q15. What is the unit to express the strength of a standard solution?

Answer. The strength of a standard solution is expressed in moles per litre.

Q16. What method is used to calculate the strength of a given solution?

Answer. The equivalent law is used to determine strength. The amount of material equivalence to be titrated is equal to the amount of titrant equivalence used under this legislation.

Q17. What is the standard solution?

Answer. A solution of known concentration is what the standard solution is called. A normal solution can be made by dissolving a known amount of the substance in a specific volume of the solvent.

Q18. What do you mean by "concordant readings"?

Answer. Concordant readings are volumetric analysis readings that differ by less than 0.05ml.

Q19. What is the difference between endpoint and equivalence point?

Answer. A titration equivalence point is the point at which the added titrant is chemically equivalent to the sample analyte. The endpoint, on the other hand, is a point at which the colour of the indicator changes.

Q20. What is Acid-Base Titration?

Answer. It is a quantitative analysis method to determine an acid's or bases' concentration by precisely neutralizing them with a standard solution of either acid or base of known concentration. It is monitored with the help of a pH indicator to know the development of the acid-base reaction.