

FBQ1: Because of the intense colouration of \_\_\_\_\_ it is very difficult to read the meniscus of the solution in burette.

Answer:  $\text{KMnO}_4$

FBQ2: The potassium permanganate solution intended for \_\_\_\_\_ must be standardised prior to use.

Answer: redox titration

FBQ3: A standard solution of Oxalic acid is a hydrated \_\_\_\_\_ that can be obtained in high purity in the laboratory.

Answer: dibasic acid

FBQ4: Oxidation-reduction reactions are reactions in which \_\_\_\_\_ are transferred from one ion to another

Answer: electrons

FBQ5: Oxidation-reduction reactions are also used in ----- like the acid-base reactions

Answer: titrimetric analysis

FBQ6: In redox titration involving potassium permanganate, if the contents of the conical flask turn brown, it means that \_\_\_\_\_ was added.

Answer: Insufficient acid catalyst

FBQ7: The equation for the redox reaction is,  $\text{X}(\text{aq}) + 5\text{C}_2\text{O}_4^{2-}(\text{aq}) + 16\text{H}^+(\text{aq}) \rightarrow 2\text{Mn}^{2+}(\text{aq}) + 10\text{CO}_2(\text{g}) + 8\text{H}_2\text{O}(\text{l})$ . Identify the reactant X.

Answer:  $\text{MnO}_4^-$

FBQ8: From the equation  $\text{MnO}_4^-(\text{aq}) + 5\text{C}_2\text{O}_4^{2-}(\text{aq}) + 16\text{H}^+(\text{aq})$  the mole ratio between the reactant is \_\_\_\_\_

Answer: 5 moles

FBQ9: Potassium permanganate is a self-indicating reagent because of its different characteristic \_\_\_\_\_ in either the acidic or basic medium

Answer: Colour changes

FBQ10: Potassium permanganate can be used to estimate the \_\_\_\_\_ of a substance.

Answer: percentage purity

FBQ11:  $\text{IO}_3^- + \text{SO}_3^{2-} \rightarrow \text{I}^- + \text{SO}_4^{2-}$  The oxidation state of oxygen in the product's equation is \_\_\_\_\_

Answer: +6

FBQ12:  $\text{IO}_3^- + \text{SO}_3^{2-}$  the oxidation state of oxygen in the equation is \_\_\_\_\_

Answer: +4

FBQ13:  $\text{CO} + \text{H}_2\text{SO}_4 \rightarrow \text{CO}_2 + \text{SO}_2 + \text{H}_2\text{O}$  The elements which undergo change in oxidation state from the reactants to the products are \_\_\_\_\_

Answer: C and S

FBQ14: Volumetric analysis involving iodine are usually referred to as \_\_\_\_\_

Answer: Iodimetry

FBQ15: In the \_\_\_\_\_, standard solutions of iodine are used to estimate directly the concentrations of some oxidizable species.

Answer: Direct method

FBQ16: In the \_\_\_\_\_ the excess iodine ion that is deliberately produced in a reaction involving say potassium iodide in an acid medium is made to react with another oxidizing agent.

Answer: indirect method

FBQ17:  $2I^-(aq) \rightarrow I_2(aq) + 2e^-$ . In this equation the liberated  $I_2$  is now quantitatively determined by titration with standard \_\_\_\_\_ solution acting as reducing agent according to the equation below.  $2S_2O_3^{2-}(aq) + I_2(aq) \rightarrow S_4O_6^{2-}(aq) + 2I^-$

Answer: Sodium thiosulphate

FBQ18: Of all the oxidizable species available for use, iodine titration are usually used with the \_\_\_\_\_

Answer: thiosulphate

FBQ19: The colour changes accompanying the varying change in oxidation states of iodine and its ion can be used to indicate the \_\_\_\_\_

Answer: end point

FBQ20: The most commonly used \_\_\_\_\_ for iodine titration is starch solution.

Answer: external indicator

FBQ21: The starch solution forms a \_\_\_\_\_ complex with the tri-iodide ion during the titration that is rapidly discharged at the end point.

Answer: blue black

\*\*FBQ22: Thus using starch as indicator, the colour variations of the solution depend on \_\_\_\_\_ formation of the starch with iodide ion formed in the last stage of the titration.

Answer: complex

\*\*FBQ23: For this reason and in order to avoid complications in the end point detection, the starch indicator is added at the \_\_\_\_\_ colouration of the solution which is near the end point.

Answer: light yellow

\*\*FBQ24: Complete the colour change in iodometry analysis. \_\_\_\_\_ (initially)  $\rightarrow$

Answer: Red-brown

FBQ25: \_\_\_\_\_ colouration is observed at near end point of the iodometry titration.

Answer: Light yellow

FBQ26: Oxidation involves the-----of electrons

Answer: lost

\*8FBQ27: The oxidation potentials of Na is\_\_\_\_\_

Answer:  $\text{Na}^+ + e^- + 2.71$

FBQ28: The study of thermal changes in chemical and physical processes is known as\_\_\_\_\_

Answer: thermochemistry

FBQ29: The \_\_\_\_\_is the amount of heat released or observed for a given amount of reactants or products

Answer: heat of reaction

FBQ30: The only acid suitable for use in redox titration involving potassium permanganate is dilute\_\_\_\_\_

Answer: Sulphuric acid

FBQ31: Nitric acid would compete with the permanganate ion for the reducing agent because itself is a \_\_\_\_\_

Answer: strong oxidizing agent

FBQ32: Reduction reaction involves ----- of electrons

Answer: gain

FBQ33: Oxidation-reduction reactions involves a change in ----- of both substances being determined

Answer: oxidation state

FBQ34: Unlike acid-base reactions, redox procedure involves the use of-----

Answer: Catalyst or slight heat

FBQ35: When atoms of elements are in their free state their oxidation number is-----

Answer: zero

MCQ1: In preparing a standard solution, two factors must be considered, namely:

Answer: 1. The solute must be pure 2. The suitable solvent should be measure to a definite volume

MCQ2: A solution contains 1.2 Molar concentration, what volume of it must be diluted with water to give 600 mls of 0.5 Molar solution?

Answer: 25 mls

MCQ3: In a chemistry laboratory a stoke bottle of acid solution reads,  $\rho = 1.25$  specific gravity  $\rho = \frac{m}{V}$ ; what does that mean?

Answer: 1 cm<sup>3</sup> of that solution weight 1.25 g

MCQ4: If 2 cm<sup>3</sup> of a stoke solution contains 1 mole of an acid how would you prepare 1 molar concentration of that acid in 250 cm<sup>3</sup> of water?

Answer: Dissolve 2 cm<sup>3</sup> of the stock solution in 248 cm<sup>3</sup> of water

MCQ5: A substance which loses water of hydration upon exposure to atmosphere is called?

Answer: Efflorescence substance

MCQ6: A substance which takes in only moisture upon exposure to atmosphere is referred to as?

Answer: Deliquescent substance

MCQ7: A table of requirement for laboratory experiment contains the following except?

Answer: List of weight of each reagents

\*\*MCQ8: Give reason why water should not be added to acid during carrying out acid-base titration?

Answer: The dissolution of acid in water is exothermic which may cause explosion

MCQ9: The concentration of pure HCl 11.7 Molar if 20 cm<sup>3</sup> of the acid is diluted to 250 cm<sup>3</sup> to give concentration of 0.936 mol.dm<sup>3</sup> substitute this values on this equation;  $C_1V_1=C_2V_2$ ?

Answer:  $11.7 \times 20 = 0.936 \times 250$

MCQ10: The point at which stoichiometrically equivalent quantities of substance have been brought together is known as?

Answer: Equivalence point of titration

MCQ11: Which of the following options is an indicator used for acid-base titration?

Answer: Methyl orange

MCQ12: In an acid base titration conducted by a student, the colour of the solution in the beaker changed from colourless to pink when phenolphthalein was used as an indicator, what went wrong?

Answer: The beaker was occupied by acid solution instead of base.

MCQ13: What is a PH of a solution?

Answer: It is the measure of hydrogen ions concentration in the solution

MCQ14: At neutralization point, the PH value is?

Answer: Seven

MCQ15: At complete neutralization point, the litmus paper colour turns?

Answer: Purple

MCQ16: Predict the colour of methyl orange when pH is 8?

Answer: Yellow

MCQ17: What is the colour of bromothymol when added to an acid solution?

Answer: Yellow

MCQ18: An indicator X was added to an acid solution in a beaker but no colour change was observed give the name of the indicator X?

Answer: Phenolphthalein

MCQ19: What is a strong acid?

Answer: Any acid that ionizes completely in solution

MCQ20: An example of a strong acid is?

Answer:  $\text{H}_2\text{SO}_4$

MCQ21: What type of indicator will be suitable for use in a titration involving  $\text{H}_2\text{SO}_4 + \text{NH}_3(\text{aq})$ ?

Answer: Methyl orange

MCQ22: Which of these indicators will be suitable for use in a titration involving a weak acid and a strong base?

Answer: Phenolphthalein

MCQ23: What is the implication of adding a phenolphthalein as an indicator during the titration of  $\text{HCl}$  against  $\text{Na}_2\text{CO}_3$ ?

Answer: The end point will appear when only half of  $\text{Na}_2\text{CO}_3$  has been used

MCQ24: What is the importance of back titration?

Answer: To determine the concentration of a substance that is in excess after a chemical reaction.

\*\*MCQ25: A 25 ml solution of 0.5 M  $\text{NaOH}$  is titrated until neutralized into a 50 ml sample of  $\text{HCl}$ ?

Answer: 0.25 mol

MCQ26: A student used a hard tap water and performed an acid base titration. In few lines explain what would happen to his result?

Answer: the starting solution would be more alkaline therefore it would require more volume of acid than expected

MCQ27: Choose the most suitable water for use in acid base titration?

Answer: Deionised water

MCQ28: Both molarity and normality are measures of concentration. True or false?

Answer: True

MCQ29: During acid-base titration sulphuric acid would be dissociated into what ions?

Answer:  $2\text{H}^+ + \text{SO}_4^-$

MCQ30: What is a titrand in titration analysis?

Answer: Unknown concentration of an analyte

MCQ31: What is a titrant in titration analysis?

Answer: Known concentration and volume of an analyte

MCQ32: Which of these is a method of finding the equivalence point?  
Answer: All of the options

MCQ33: When performing acid-base titration, one should first?  
Answer: Rinse the burette twice with acid solution

MCQ34: The equation  $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$  is a \_\_\_\_?  
Answer: Neutralization reaction

MCQ35: The following are advantages of acid base titration except?  
Answer: Less accuracy and precision

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