CY104S1_Practical Exam-2022

Please read the questions carefully, there are 50 MCQ type questions, each carrying one mark and only one correct option. The duration of exam is 1:00 pm-2:00 pm (One hour), please submit the response before 2:00 pm.

1

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4

What is the role of adding conc. Sulphuric acid and conc. Nitric acid in the electrolysis beaker for the electrodeposition of Cu? *
(1 Point)

- To maintain the acidity of the solution.
- To oxidize the Cu atoms.
- To prevent the accumulation of gases near the electrodes.
- All the above.

5

Why a gauze type cathode is used in the electrodeposition of Cu? *
(1 Point)

- Because it is cheap and easily available.
- So that it can readily dissolve in the electrolytic solution.
- Because its weight will be minimal.
- To increase the surface area required for electrodeposition.

6

What kind of electrode is not advisable for cathode for studying electrodeposition of Cu? *
(1 Point)

- Copper
- Platinum

- Graphite
- None of the Above

7

Which of the following interferes in the electrodeposition of Cu? *
(1 Point)

- Nitrate
- Nitrite
- Silver
- All the above

8

What is the discharge potential of Cu? *
(1 Point)

- + 0.325 V
- -0.15 V
- -0.325 V
- + 0.35 V

9

Which of the following is not true about iodometric titration? *
(1 Point)

- It’s not a direct iodine titration.
- It’s a kind of redox titration.

- Sodium thiosulphate is generally used as titrant.
- None of the above.

10

In the Winkler method____ *
(1 Point)

- Dissolved oxygen oxidizes iodine
- Dissolved oxygen oxidizes iodide
- Atmospheric oxygen oxidizes iodine
- Dissolved oxygen oxidizes manganese (+2) ion

11

During the titration in Winkler's method, what is the fate of thiosulphate ion? *
(1 Point)

- It forms tetrathionate ion.
- It forms colloidal solution of sulphur.
- It is converted to sulphur dioxide.
- It is converted to sulphate ion.

12

In Winkler method, what is the correct time to add starch? *
(1 Point)

- After titrating until pale yellow colour is obtained.
- just before starting the titration, when the colour is brownish yellow.

- before adding Manganese Sulphate.
- After titrating until colourless solution is obtained.

13

3.84 grams of dissolved oxygen will consume___ *
(1 Point)

- 119.12 grams of sodium thiosulphate pentahydrate.
- 75.89 grams of sodium thiosulphate pentahydrate.
- 15.36 grams of sodium thiosulphate pentahydrate.
- 29.78 grams of sodium thiosulphate pentahydrate.

14

The last line in the plot of Conductance v/s Volume of NaOH in all the titration is due to *
(1 Point)

- Decrease in the OH- ions
- Increase in H+ ion
- Increase in the OH- ions
- Decrease in H+ ion

15

The hydrogen ion has highest conductance due to___ *
(1 Point)

- High mobility
- Small size

- Both the above
- None of these

16

As temperature increases, electrolytic conduction___ *
(1 Point)

- Decreases
- Increases
- Remains unaffected
- None of the above

17

On dilution, the specific conductance___ *
(1 Point)

- Increase
- Remains same
- Decrease
- None of the mentioned

18

How will you prepare 0.1 N, 250 mL sodium thiosulphate solution *
(1 Point)

- By weighing 4.0 of sodium thiosulphate in 250 mL of water
- By weighing 6.2 of sodium thiosulphate in 250 mL of water

- By weighing 7.2 of sodium thiosulphate in 250 mL of water
- By weighing 10 g of sodium thiosulphate in 250 mL of water

19

The titrimetric determination of ascorbic acid is a type of___ *
(1 Point)

- Iodometric titration
- Iodimetric titration
- Complexometric titration
- Acid-base titration

20

While the potassium iodide is a powerful reducing agent, *
(1 Point)

- Iodine is oxidised to iodide ion
- Iodine is reduced to iodide ion
- The iodide ion is oxidized to iodine
- The iodide ion is reduced to iodine

21

Starch-iodide paste is used as an external indicator in one of the following titrations. *
(1 Point)

- Iodometric titration of copper sulphate using sodium thiosulphate as titrant
- Iodimetric titration of ascorbic acid using iodine solution as titrant

- Potassium dichromate titration using sodium thiosulphate as titrant.
- Diazotisation titration of sulphadiazine using sodium nitrite as titrant

22

Ascorbic acid works as ___ *
(1 Point)

- Reducing agent
- Oxidizing agent
- Both the above
- None of the above

23

Which of the following cannot be used as secondary reference electrode? *
(1 Point)

- Glass electrode
- Mercury-mercury sulphate electrode
- Silver-silver chloride electrode
- Calomel electrode

24

Which of the following statement is not true? *
(1 Point)

- The saturated calomel electrode is a reference electrode
- The platinum electrode functions as a cathode

- Ceric ammonium sulfate act as a reducing agent in potentiometric titration
- The Indicator electrode is a platinum electrode

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Calomel electrode can behave as ____ *
(1 Point)

- cathode only
- anode or cathode
- salt bridge
- anode only

26

In an electrochemical cell, reduction takes place at *
(1 Point)

- cathode
- anode
- salt bridge
- It depends on the potential applying

27

Which of the following is not the characteristic of a calomel electrode? *
(1 Point)

- The potential of the electrode is not temperature-dependent
- Value of potential or emf is higher for a lower concentration of KCl

- Preparation of electrode is easy
- Value of potential decreases with increasing concentration of KCl

28

Consider the titration of 30.0 mL of 0.20 M Acetic acid by adding 0.0500 M aqueous ammonia Hydroxide to it. The pH at the equivalence point is___ *
(1 Point)

- Is impossible to predict
- Less than 7
- Equal to 7
- Greater than 7

29

Consider a solution which is 0.10 M in CH3COOH and 0.20 M in NaCH3COO. Which of the following statements is true? *
(1 Point)

- If a small amount of NaOH is added, the pH decreases very slightly.
- If HCl is added, the H+ ions react with CH3COOH ions.
- If NaOH is added, the OH- ions react with the CH3COO- ions.
- If a small amount of HCl is added, the pH decreases very slightly.

30

Which of the following statement is not true? *
(1 Point)

- The glass electrode is not sensitive to H+ ion concentration

- The pH meter measures the total potential across the two electrodes
- The value of the Ionic product (Kw) is temperature-dependent
- Calomel electrode potential is constant

31

Why is the Standard hydrogen electrode called as the primary reference electrode? *
(1 Point)

- It has a known output potential
- Its output potential is independent of the composition of the solution
- It has a constant output potential
- Its output potential is zero volts

32

Choose the wrong statement for spectrometric analysis *
(1 Point)

- An absorbance of 0 at some wavelength means that no light of that particular wavelength has been absorbed
- On most of the diagrams you will come across, the absorbance ranges from 0 to 1, but it can go higher than that
- molar extinction coefficient is a measure of the probability of the electronic transition
- None of the above

33

Which of the following is not in the Beer Lambert's Law equation? *
(1 Point)

- concentration
- light wavelength
- cell path length
- molar absorptivity

34

Cell path length can be defined as___ *
(1 Point)

- distance between the light source and detector
- distance between light and object
- distance light travels through the substance
- the wavelength of the light

35

Unit of molar molar absorptivity is___ *
(1 Point)

- $L^{-1} mol\ cm^{-1}$
- $L\ mol^{-1} cm^{-2}$
- $L^{-1} mol^{-1} cm^{-1}$
- $L\ mol^{-1} cm^{-1}$

36

Beer Lambert's law gives the relation between which of the following? *
(1 Point)

- Reflected radiation and concentration
- Energy absorption and reflected radiation
- Scattered radiation and concentration
- Energy absorption and concentration

37

Lambert's law states that the intensity of light decreases with respect to * (1 Point)

- Distance
- Volume
- Concentration
- Composition

38

_____ is the amount of oxygen required to oxidize only organic matter in sewage. *
(1 Point)

- DO
- Turbidity
- COD
- BOD

39

We can determine COD by____ *
(1 Point)

- complexometric titration
- Back redox titration
- direct redox titration
- acid-base titration

40

Indicator that is used in determination of COD *
(1 Point)

- FAS
- Ferroin
- Phenolphthalein
- Starch

41

To test chemical oxygen demand (C.O.D.) of sewage, organic matter is oxidised by potassium dichromate in the presence of_____? *
(1 Point)

- Hydrochloric acid
- Citric acid
- Sulphuric acid
- Nitric acid

42

A 50 ml of a sewage water sample was refluxed with 10 ml of 0.25N $K_2Cr_2O_7$ solution of dil H_2SO_4. The unreacted dichromate required 5 ml of 0.15 N ferrous ammonium sulphate. 10 ml of distilled water, under the same conditions as the sample, required 20 ml of 0.15 N ferrous ammonium sulphate. Calculate the COD of the sewage water sample. *
(1 Point)

- 360 ppm
- 370 ppm
- 300 ppm
- 350 ppm

43

The pH range is to be maintained in EDTA titration *
(1 Point)

- 3
- 10
- 7
- 8

44

Color change in the following reaction is-
Hard water + EBT = Metal ion – indicator complex
*
(1 Point)

- blue to red

- colorless to red
- Red to blue
- blue to colorless

45

In the determination of Cu in brass sample solution, the re-dissolution of precipitate is done by adding *
(1 Point)

- KI solution
- Acetic acid
- HNO3
- Ammonium hydroxide

46

The salt_____is a hardness producing substance *
(1 Point)

- Na_2SO_4
- $MgCl_2$
- $NaCl$
- Na_2CO_3

47

Naturally occurring ascorbic acid is found in___ *
(1 Point)

- None of the above

- L form
- D and L both
- D form

48

Which one is used as primary Standard Solution in laboratory *
(1 Point)

- H_2SO_4
- $NaOH$
- HCl
- $K_2Cr_2O_7$

49

Which of the following acts as a self - indicator? *
(1 Point)

- $K_2Cr_2O_7$
- $Oxalic\ acid$
- $Iodine$
- $KMnO_4$

50

Ascorbic acid is a____ *
(1 Point)

- cyclic ketone

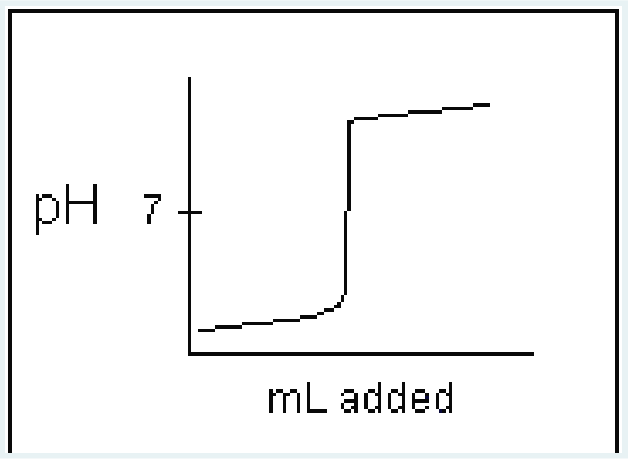
- cyclic ether
- cyclic ester
- aldehyde

51

Erichrome black-T is a type of indicator *
(1 Point)

- Metal ion as well as acid-base indicator
- Metal ion indicator
- Acid-base indicator
- Redox indicator

52



The following pH-metric titration curve is the kind of curve expected for the titration of a ____ acid with a ____ base *
(1 Point)

- weak, weak
- weak, strong
- strong, weak

strong, strong

53

Which indicator is used in potentiometric titration? *
(1 Point)

- Methyl orange
- Electrolyte solution
- EBT solution
- None of the above