Sukanta Mahavidyalaya

On-line Practical Question

Subject: Chemistry

PAPER – 11[QUANTITATIVE INORGANIC][H]

3rd Year (Old-System)

Total Marks: 5 + (5 X 6 =30) = 35

Time : 3 Hours

a. Answer any Five Questions **5 X 6 =30**

1. What are the differences between standard redox potential and formal redox potential? What is redox titration? How redox indicator shows the colour change at end point of titration. 3 +1 +2
2. What are Primary Standard and Secondary Standard Solution? Is $KMnO_4$ Solution Secondary standard? Why? Explain it. What is the value of one gram equivalent weight of $KMnO_4$ 2 +1 +2 +1
3. Which Indicator is used in the permanganometry titration? Why that indicator shows the colour change? Why it is required the slightly heating (50-70^oC) of oxalic acid solution during the standardrization of permanganate solution with oxalic acid? Which gas is formed in this titration and why .
   1+2 +2 +1
4. Write down the principle of Fe(II) estimation with standard $KMnO_4$ solution. What is the role of phosphoric acid or ammonium bifluride in the titration of Fe(II) versus $KMnO_4$. 3 +3
5. Write down the principle of estimation of total Fe(II) and F(III) in a mixture through dichromatometry titration ? What is the role of $SnCl_2$ using in this titration? What is Zimmermann-Reinhardt mixture ? 3 +2 + 1
6. What are the differences between Idometry and Iodimetry titration? Write the chemical structure of sodium thiosulfate. What are the limitations of starch indicator? Why KI used in Iodometric titration? 2+1 +2 +1
7. Write down the principle of Iodometry titration for determination of CU(II) .The standard reduction potential of CU^{+2}/ CU^{+} is lower than of I_2/I^-, yet copper is estimated iodometrycally –How this become possible ? 3 + 3

b. **Laboratory Note Book** **5**

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Practical Assessment

Subject:-Physical Chemistry practical (Part III)

Full Marks: 30 Time: 3 Hour

Answer any five questions 5×6 = 30

1) (i) How the viscosity of unknown solution is determine using the Ostwald Viscometer?-Explain briefly. (ii) Write down the unit of viscosity in SI unit. (iii) How the viscosity coefficients vary with rise of temperature in case of liquid and gas?

(3 + 1 + 2)

2) (i) Explain the theory to determine the composition of given unknown solution by the measurement of surface tension using Stalagmometer (ii) Write down the unit and dimension of surface tension in SI unit.

(4 + 2)

3) (i) Define surface-tension and surface energy. (ii) Why liquid drops are spherical? (iii) Why stalagmometer should be perfectly vertical? (iv) How surface tension of liquid changes with temperature?

(2 + 2 + 1 + 1)

4) (i) What is pH? (ii) Defined buffer solution (iii) Write down the mechanism of buffer solution.

(1 + 1 + 4)

5) (i) A buffer solution is made from 0.4 (M) CH_3COOH and 0.6 (M) CH_3COO^-. If the acid dissociation constant of CH_3COOH is 1.8×10^{-5}, what is the pH of the buffer solution? (ii) When the buffer capacity of a buffer is maximum. (iii) What kind of buffer solution present in human blood?

(3 + 2 + 1)

6) (i) Write the working theory of conductometric titration between weak acid CH_3COOH and strong base NaOH? (ii) Why H^+ and OH^- ion have very high ionic mobility.

(3 + 3)

7) (i) Write the working principle for the determination of rate constant for the acid hydrolysis of methyl acetate at room temperature? (ii) Why some portion of the sample is heated 70° C for this reaction? (iii) Is it possible to perform this reaction with base instead of acid?

(4 + 1 + 1)

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Bsc part II(GENERAL)EXAMINATION,2021,Under(1+1+1)System

Subject = 6th paper(Inorganic Chemistry[G])

Full marks=30

1) Laboratory Note Book [5]

2) Answer any **five** questions. [5x5=25]

A. i. What do you mean by solubility product? [2+2+1=5]
ii. What is buffer solution?
iii. what is the formula of 'Borax'?

B. i. On What basis group separation is carried out ? [2+3=5]
ii. Why should the interfering acid radicals be removed before the precipitation of Gr III A?

C. I .Why is Sodium Carbonate extract used for Detection of acid radicals ? [2+3=5]
ii. What are oxidising and reducing agents ? Give example.

D. i. What is Soda lime ? [1+2+2=5]
ii. What is Nessler Reagent ?
iii. Write down the formula of Ni-dimethyl glyoxime .

E. i . What is p^H? [2+3=5]
ii. Define Buffer solution . Give example.

F. i. What is the principle of flame test ? [2+1+2=5]
ii. Which salt gives apple green colour in the flame test?
iii. How will you confirm nitrate in the given mixture ?