2021
B.A./B.Sc. Semester I Honours Examination
University of Calcutta
CHEMISTRY
Paper CC1
(PRACTICAL)
F.M. 30

FAKIR CHAND COLLEGE CENTRE (551)

[Use A4 pages and black ink only for writing answers. Write Roll number and Registration number at the top and page number at the bottom of each page. Images of answer script and admit card must be in a single pdf file.]

INORGANIC CHEMISTRY (CC-IA) (Marks : 20)

1) For the estimation of the quantity of oxalic acid and sodium oxalate present in a mixture in g/L:

a) (i) Write down the principle of estimation mentioning all the equations involved and derive the workingformula. (3+2)

(ii) Why do we heat oxalic acid solution containing sulphuric acid up to 70°C-80°C in the permanganate titration? Why higher temperature heating is avoided? (1+1)

b) Using the following data calculate the strength of ~(N/20) $KMnO_4$ solution.

i) 0.8040 g of oxalic acid has been accurately weighed, transferred to a 250 ml volumetric flask andvolume is made up with distilled water. (2)

ii) Standardization of $KMnO_4$ by standard oxalic acid. (2)

No. of titration	Volume of standard solution taken (ml)	Burette reading of $KMnO_4$ solution (ml)			
		Initial	Final	Difference	Most frequent reading
1.	25.0	0.0	25.7	25.7	25.8
2.		0.0	25.8	25.8	
3.		0.0	25.8	25.8	

iii) Standardization of NaOH by standard oxalic acid. (2)

No. of titration	Volume of standard solution taken (ml)	Burette reading of NaOH solution (ml)			
		Initial	Final	Difference	Most frequent reading
1.	25.0	0.0	24.4	24.4	24.4
2.		0.0	24.3	24.3	
3.		0.0	24.4	24.4	

c) Using the above data, calculate the amount of oxalic acid and sodium oxalate in g/L using the following specimen results:

i) Table for estimation of oxalic acid. (2)

No. of titration	Volume of stock solution taken (ml)	Burette reading of NaOH solution (ml)			
		Initial	Final	Difference	Most frequent reading
1.	25.0	0.0	15.5	15.5	15.5
2.		0.0	15.5	15.5	
3.		0.0	15.5	15.5	

ii) Table for estimation of total oxalic acid and sodium oxalate. (2)

No. of titration	Volume of stock solution taken (ml)	Burette reading of $KMnO_4$ solution (ml)			
		Initial	Final	Difference	Most frequent reading
1.	25.0	0.0	28.4	28.4	28.5
2.		0.0	28.5	28.5	
3.		0.0	28.5	28.5	

d) Calculation and Results. (2+1)

ORGANIC CHEMISTRY (CC-IB) (Marks : 10)

2. You are given a 1:1 mixture of two pure solids, (a) Benzoic acid and (b) Naphthalene.
How would you separate them into two pure components using their solubility in different solvents only? Describe the procedure of separation and give reasons for the choice of solvent.
(a) Choice of solvent (2)
(b) Procedure of separation (4)
(c) Explanation (4)