Jadavpur University

1st BSc 1st Sem GE Practical 2019 (new)

Paper: GE/Chem/PR/01 **Full Marks: 50**

Q1. Estimate the amount of Fe(II) and Fe(III) present together in a mixture.	30
Q2, Viva-Voce	10
Q3. Laboratory Notebook	10

Hints Q1

(a) Transfer quantitatively the given sample marked XX into a 250 mL volumetric flask and make up the volume with distilled water to prepare the stock solution.

(b) (i) Determination of Fe(II)

Take an aliquot of 25 mL of the stock solution in a 250 mL conical flask, dilute with an equal volume of 4(N) sulphuric acid and add 5 mL syrupy phosphoric acid and 2-3 drops of BDS indicator solution. Titrate with supplied standard (N/20) $K_2Cr_2O_7$ solution, while swirling the flask gently, until the solution changes from bright green to intense red-violet. Record the titre value of dichromate solution.

(ii) Determination of Fe(II) + Fe(III)

Take an aliquot of 25 mL of the stock solution in a 500 mL conical flask. Add 25 mL conc. HCl. The solution assumes a reddish brown colour. Heat the solution to nearly boiling and then reduce the solution with $SnCl_2$ solution adding dropwise with constant shaking until the yellow colour of the solution just discharges. Add one drop $SnCl_2$ in excess. Cool the flask rapidly under tap to room temperature. Add 10 mL 5% $HgCl_2$ solution at a time, shake and allow to stand for about 5 min when a silky white ppt appears. Dilute the solution with 100 mL of distilled water, add 5 mL syrupy phosphoric acid and 2-3 drops of BDS indicator solution. Titrate with supplied standard (N/20) $K_2Cr_2O_7$ solution, while swirling the flask gently, until the solution changes from bright green to intense red-violet. Record the titre value of dichromate solution.

(iii) Report the amount of Fe(II) and Fe(III) in the mixture separately.