Bhakta Kavi Narsinh Mehta University

BSc Semester V
Chemistry Practicals
With effect from June-2018
[CBCS]

Instructions to Examiners

CHEMISTRY PRACTICALS: SEMESTER V

[Total: 150 Marks]

- **Internal Evaluation [CCA]: 45 Marks**
- **External Evaluation [SEE]: 105 Marks**

CCA (Internal Evaluation): Total 45 Marks

Equal weightage to all Sections i.e.

- Organic Chemistry: 15 Marks
- Inorganic Chemistry : 15 Marks
- Physical Chemistry : 15 Marks

SEE (External Evaluation): Total 105 Marks

- Three Practical Exercises are to be given one from each section- Organic, Inorganic and Physicochemical Exercises
- Marks Distribution for Practicals Examination :
  - Organic Separation : 40 Marks
  - Inorganic Volumetric Estimation : 30 Marks
  - Physicochemical Exercise : 35 Marks

Total : 105 Marks

Note:

- **Internal Evaluation: [45 Marks] by the respective College**
- **External Evaluation: [105 Marks] by the Examiners appointed by BKNMU University for the Practical Examination**

TYBSc Semester V Chemistry Practical Examination
Important Guidelines to the Examiners

Dear Colleagues

Welcome to the panel of Examiners!

Most of you are experienced and knowledgeable, hence aware and familiar with the examination related responsibilities. However having been assigned the responsibility of preparing the guidelines for the forthcoming BSc Semester V Chemistry Practical Examination 2018-19, this a humble effort to formulate certain guidelines to ensure uniform evaluation at all centres and a smooth conduct of the examination.

The pages following the instructions contain:

- Specific Requirements for each Exercise
- Marking Scheme for different Exercises

The Question Papers (Slip) for the Practical Examination and formats A (Organic), B (Inorganic), C (Physico-chemical), D (Viva) and E (Consolidated Marksheet) are enclosed in a separate booklet. The booklet also contains the format for detailed batch wise and group wise schedule of the examination to be displayed on the notice board at the examination centre.

In case the copies are not sufficient, the Examiners shall request the Lab Supervisor / Principal to make arrangement for photocopying the same.

General Instructions:

- The Examiners appointed for the BSc Semester V Chemistry Practicals must report to the Principal of the concerned College at the Examination centre at least one hour before the commencement of the Examination.
- The assessment of the practical answer sheets is to be kept confidential. The examination work shall not be carried out in presence of any other member.
- The Examiner named fist is the Senior Examiner
- It shall be the responsibility of the Senior Examiner to ensure smooth conduct of the examination. The other Examiners are equally responsible and shall extend wholehearted cooperation to the Senior Examiner in the smooth conduct of the examination
- The detailed batch wise and group wise schedule of the examination at the allotted centre shall be sent to the centre by Senior Examiner at least one day prior to the

commencement of the examination. For the benefit of the candidates, the schedule shall be displayed on the notice board at the centre a day before the commencement of the examination,

- For the examination purpose the candidates shall be divided into two groups 'A Group' and 'B Group'.
- The Senior Examiner shall distribute the work to his/her colleague and guide him/her where necessary.
- The Senior Examiner shall inform the Lab Supervisor to keep the answer sheets ready for the examination. The Seat Numbers shall be written in blue ballpoint pen and the Table Number in red ballpoint pen.
- The Senior Examiner shall collect the certificate from the Lab Supervisor, indicating standardization of the laboratory equipments, before the commencement of the examination.
- On the day of the completion of the examination the senior examiner shall enter the mark in the mark sheet in Blue/ Black, seal the mark sheet and forward the same to the University immediately after the examination.
- The details in the mark sheet should be filled in English only.
- The attendance report should be filled in duplicate. One copy of the attendance report should be put in the cover along with the mark sheet.
- Another copy of the attendance report and the key forms (A-E) should be packed with the answer sheets and sent, so as to reach the University before the meeting for settling the marks.
- For authenticity, the examiners shall verify the fee receipt and ID cards of the candidates.

Some Important Instructions:

- The work distribution between the two Examiners is as follows:

  Examiner 1: Physico-chemical + Inorganic Volumetric

  Examiner 2: Organic Separation + Viva

- Marks Weightage

  Organic Separation : 35 Marks

Inorganic Volumetric	: 30 Marks
Physico-chemical	: 30 Marks
Viva (Organic +Physico-chemical)	: 10 Marks
Total Marks	**: 105 Marks**

- Practical Schedule

DAY	Session	'A' GROUP	'B' GROUP
FIRST DAY	10.00 AM, Session-1	Organic Separation	Physico Chemical
	Session-2	Physico Chemical	Organic Separation
SECOND DAY	Session-3	Volumetric Analysis & Viva	

- The number of exercises to be performed by each candidate is 3. The Examination shall be conducted in 3 Session each of 3 hours.
- The Organic Mixture given for Organic Separation should not be repeated in a batch i.e. no two students of a batch should be given the same organic mixture.
- For Inorganic Volumetric Estimation, three expert readings are to be considered. The volume given to the expert should differ from that given to the candidates.
- In case of Physico-Chemical Exercise no two students of a batch should be given the same Exercise
- The allotment of the exercise shall be as per the lucky draw system wherein the candidate shall be asked to pick up a chit indicating the exercise number.
- The Examiners are requested to go through the Question Paper Slip before assigning the Exercise. In case of any typing mistake the Examiner shall make the necessary correction before assigning the Exercise.

BSc Semester V
[CBCS]
Chemistry Practicals

Marking Scheme

Bhakta Kavi Narsinh Mehta University
BSc Semester V Chemistry Practical Examination

Organic Separation – Exercise No. 1

Note:

The organic mixture should not be repeated in a batch i.e. no two students of a batch should be given the same organic mixture.

General Instructions:

- First instruct the students to determine the type of given mixture
- After the determination of the type of mixture, instruct the students to write the method to be used for separation
- The Examiner should check and sign the separation method written by the students
- The student may then be instructed to proceed for separation of the organic mixture

In case the candidate has determine a totally wrong type for the mixture or inspite of the efforts the candidate is not in a position to determine the type, the Examiner may guide the candidate accordingly. [In such case the marks for the determination of the type of mixture may be reduced depending upon the guidance provided by the Examiner.]

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BSc Semester V Chemistry Practical Examination

Organic Separation – Exercise No. 1

Marks Distribution **Total Marks: 35**

1. Type of Mixture and Separation 7 Marks (4+3)
   (Note: For Solid + Liquid or Liquid + Liquid mixture, marks should be assigned if the type is determined by physical methods. However the candidate should be guided to determine the nature of each component after the separation.)
2. Preliminary Tests 6 Marks
   (3 marks for each component)
3. Detection of Elements 6 Marks
   (3 marks for each component)
4. Functional Group Test 6 Marks
   (3 marks for each component)
5. MP/BP 2 Marks
   (1 marks for each component)
6. Identification of the compound 2 Marks
   (1 marks for each component)
7. Confirmatory Tests 4 Marks
   (2 marks for each component)
8. Systematic Working 2 Marks

   Total Marks **35 Marks**

Note:

- **For Organic Mixture refer to Appendix - I (List of Organic Mixtures)**
- **For entering the marks use Form A (Organic Separation)**

APPENDIX – I

LIST OF ORGANIC MIXTURES

Type A Acid + Phenol (A+P)

1.	Salicylic acid	+	β – Naphthol
2.	Benzoic acid	+	β – Naphthol
3.	Cinnamic acid	+	α - Naphthol
4.	Phthalic acid	+	α - Naphthol
5.	Anthranilic acid	+	β – Naphthol
6.	Sulphanilic acid	+	α - Naphthol

Type B Acid + Base (A+B)

7.	Anthranilic acid	+	m-nitroaniline
8.	Sulphanilic acid	+	p-toludine
9.	Salicylic acid	+	diphenylamine
10.	Cinnamic acid	+	p-nitroaniline
11.	Phthalic acid	+	α - Naphthylamine
12.	Benzoic acid	+	p-toludine

Type C Acid + Neutral (A+N)

13.	Benzoic acid	+	acetanilide
14.	Salicylic acid	+	Benzamide
15.	Cinnamic acid	+	Anthracene
16.	Phthalic acid	+	Naphthalene
17.	Sulphanilic acid	+	m-dinitrobenzene
18.	Anthranilic acid	+	Acetanilde

Type D Phenol + Base (P+B)

19.	β – Naphthol	+	m-nitroaniline
20.	α - Naphthol	+	p-nitroaniline
21.	α - Naphthol	+	p-toludine
22.	β – Naphthol	+	Diphenylamine
23.	α - Naphthol	+	α - Naphthylamine

Type E Phenol + Neutral (P+N)

24.	β – Naphthol	+	naphthalene
25.	β – Naphthol	+	acetanilide
26.	α - Naphthol	+	Benzamide
27.	α - Naphthol	+	Anthracene
28.	β – Naphthol	+	m-dinitrobenzene

Type F Base + Neutral (B+N)

29.	p-toludine	+	Anthracene
30.	m-nitroaniline	+	Acetanilide
31.	p-nitroaniline	+	naphthalene
32.	m-nitroaniline	+	m-dinitrobenzene
33.	p-toludine	+	Benzamide

Type G Neutral + Neutral (N+N)

34.	Urea	+	Benzamide
35.	Urea	+	Acetanilide

Type H. Liquid + Liquid

36.	Chloroform	+	Chlorobenzene (N+N)
37.	Carbon tetrachloride	+	Bromobenzene (N+N)
38.	Acetone	+	Bromobenzene (N+N)
39.	Ethyl acetate	+	Nitrobenzene (N+N)
40.	Carbon tetrachloride	+	Aniline (N+B)
41.	o- Cresol	+	Toluene (P+N)
42.	Ethylacetate	+	Aniline (B+N)
43.	Acetone	+	Aniline (B+N)
44.	Ethanol	+	Nitrobenzene (N+N)

Type I Solid + liquid

45.	Salicylic acid	+	Ethylacetate (A+N)
46.	Salicylic acid	+	Acetone (A+N)
47.	Benzoic acid	+	Ethanol (A+N)
48.	Naphthalene	+	Acetone (N+N)

49. m-dinitrobenzene + carbon tetrachloride (N+N)
50. Acetanilide + Acetone (N+N)
51. m-dinitrobenzene + Acetone (N+N)

Note

- Everyday one [liquid + solid] mixture and two [liquid + liquid] mixture or two [liquid + solid] mixture and one [liquid + liquid] mixture should be given to the candidate
- Do not repeat any mixture on the same day

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BSc Semester V Chemistry Practical Examination

Inorganic Volumetric Analysis

Exercise No 2 -10 [30 Marks]

For volumetric exercise all the standard solutions are to be prepared by the students

Ex. No. 2 Estimation of Cu^{+2} and $CuSO_4.5H_2O$ in the given $CuSO_4.5H_2O$ using 0.05M $Na_2S_2O_3.5H_2O$ solution

Preparation of the Solution: Dissolve 125 gms pure crystalline $CuSO_4.5H_2O$ in 1 litre solution

Chemical Requirement:

0.05 N $Na_2S_2O_3.5H_2O$ solution to be prepared by the students

10% KI solution

2N Na_2CO_3

2N acetic acid

Fresh starch solution

Ex. No. 3. Estimation of As^{+3} and As_2O_3 in the given As_2O_3 using 0.05M $Na_2S_2O_3.5H_2O$ solution.

Preparation of the Solution: Dissolve 32 gms sodium arsenite Na_3AsO_3 in 1 litre solution

Chemical Requirement:

0.05 N $Na_2S_2O_3.5H_2O$ solution to be prepared by the students

0.05N I_2 solution

solid $NaHCO_3$, fresh starch solution.

Ex. No 4(a): Estimation of the amount of Ni^{+2} in the given $NiSO_4.7H_2O$ solution using 0.01M EDTA solution. [Direct Titration]

Preparation of the Solution: Dissolve 28gms pure crystalline $NiSO_4.7H_2O$ in 1 litre solution

Chemical Requirement:

0.01M EDTA disodium salt solution to be prepared by the students

Buffer solution: Mixture of equal volume of 1M NH_4Cl solution and 1M NH_3 solution.

Murexide indicator (solid mixture from or freshly decanted solution)

Ex. No 4(b): Estimation of the amount of Ni^{+2} in the given $NiSO_4.7H_2O$ solution using 0.01M EDTA solution. [Direct Titration]

Preparation of the Solution: Dissolve 28gms pure crystalline $NiSO_4.7H_2O$ in 1 litre solution

Chemical Requirement:

0.01M EDTA disodium salt solution to be prepared by the students

Bromopyrogallol Red indicator

Buffer solution: Mixture of equal volume of 1M NH_4Cl solution and 1M NH_3 solution.

Ex. No 4(c): Estimation of the amount of Ni^{+2} in the given $NiSO_4.7H_2O$ solution using 0.01M EDTA solution. . [Back Titration]

Preparation of the Solution: Dissolve 28gms pure crystalline $NiSO_4.7H_2O$ in 1 litre solution

Chemical Requirement:

0.01M EDTA disodium salt solution to be prepared by the students

Eriochrome Black T indicator

0.01 M $MgSO_4$ solution

Buffer solution (pH 10): 17.5 gm NH_4Cl + 142 ml NH_3 solution make up the volume to 250 ml with distilled water

Ex. No. 5 Estimation of the amount of Mg^{+2} and Pb^{+2} in the given solution containing a mixture of Mg^{+2} and Pb^{+2} using 0.01 M EDTA solution

Preparation of the Solution: Dissolve 16 gms Lead nitrate $Pb(NO_3)_2$ and 80 gms Magnesium nitrate $Mg(NO_3)_2$ in 1 litre solution

Chemical Requirement:

0.01M EDTA disodium salt solution to be prepared by the students

Buffer solution (pH 10): 17.5 gm NH_4Cl + 142 ml NH_3 solution make up the volume to 250 ml with distilled water

10% hexamine solution or solid powder, buffer solution (pH = 10).

Indicators : Eriochrome Black-T and Xylenol Orange

Ex. No. 6 Estimation of the amount of Ca^{+2} and Zn^{+2} in the given solution containing a mixture of Ca^{+2} and Zn^{+2} using 0.01 M EDTA solution

Preparation of the Solution: Dissolve 5.5 gms $CaCl_2$ and 7.0 gms $ZnCl_2$ in 1 litre solution

Chemical Requirement:

0.01M EDTA disodium salt solution to be prepared by the students

Buffer solution (pH 10): 17.5 gm NH_4Cl + 142 ml NH_3 solution make up the volume to 250 ml with distilled water

10% hexamine solution or solid powder, buffer solution (pH = 10).

Indicators: Eriochrome Black-T and Xylenol Orange

Ex. No. 7 Determination of the amount of Fe^{+3} & Cr^{+3} in the given solution containing a mixture of $FeCl_3 \cdot 6H_2O$ and $CrCl_3 \cdot 6H_2O$ using 0.01 M $Pb(NO_3)_2$ solution

Preparation of the solution: Dissolve 5.5 gms $FeCl_3 \cdot 6H_2O$ and 5.5 gms $CrCl_3 \cdot 6H_2O$ in 1 litre solution

Chemical Requirements

0.01M EDTA disodium salt solution to be prepared by the students

Indicator Xylenol Orange

10% hexamine solution or solid powder,

0.01 M $Pb(NO_3)_2$ solution to be prepared by the students

Ex. No. 8 Determination of the amount of NO_2^{-1} in the given $NaNO_2$ or KNO_2 solution by reduction method using 0.1 N $KMnO_4$ solution.

Preparation of the Solution: Dissolve 35 gms $NaNO_2$ or 42 gms KNO_2 in 1 litre solution

Chemical Requirement:

0.1N $KMnO_4$ solution to be prepared by the students

2N H_2SO_4

Ex. No. 9 To determine the amount of chloride in the given sample of water using 0.02N $AgNO_3$ solution

Preparation of the Solution: Sample of water

Chemical Requirement:

(Approx) 0.02N $AgNO_3$ solution

0.02 N NaCl

K_2CrO_4 indicator solution

Ex. No. 10 To determine the purity of $NaHCO_3$ in the given sample of antacid

Chemical Requirements:

Sample of antacid

0.05 N HCl

methyl orange indicator

Note: For Inorganic Volumetric Analysis the Volume of the original solution given to the candidates should be 20, 22, 24, 26, 28 and 30 ml

Inorganic Volumetric Analysis

Use Form B [Inorganic Volumetric Analysis] to enter the Marks

Marks Distribution Scheme for Exercise Nos. 2-10

Total Marks: 30

Error in the reading		One Part	Two Parts (for each part)
	Difference of 0.1 ml	20 Marks	10 + 10 Marks
	Difference of 0.2 ml	18 Marks	9 + 9 Marks
	Difference of 0.3 ml	16 Marks	8 + 8 Marks
	Difference of 0.4 ml	14 Marks	7 + 7 Marks
	Difference of 0.5 ml	12 Marks	6 + 6 Marks
	Difference of 0.6 ml	10 Marks	5 + 5 Marks
	Difference of 0.7 ml	8 Marks	4 + 4 Marks
	Difference of 0.8 ml	6 Marks	3 + 3 Marks
	Difference of 0.9 ml	4 Marks	2 + 2 Marks
	Difference of 1.0 ml	2 Marks	1 + 1 Marks
Correct Calculations		6 Marks	6 Marks
Systematic Working		4 Marks	4 Marks
	Total Marks	**30 Marks**	**30 Marks**

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BSc Semester V Chemistry Practical Examination

Physico-Chemical Exercises

Exercise No 11 -24 [30 Marks]

Exercise No. 11 Conductometry

Aim: Determine the cell constant of the given conductivity cell by using 0.1N KCl solution and also determine normality of the given HCl solution by conductometric titration

Requirements:

Solid KCl

0.5N NaOH solution

0.1 N HCl solution (as unknown concentration)

Marks Distribution

Arrangement + Systematic Working	6 Marks
Correct Cell Constant	6 Marks
Neatness –Observation table (at least 8 readings)	6 Marks
Correct Graph	6 Marks
Correct Normality	6 Marks
Total Marks	**30 Marks**

Exercise No 12 Conductometry

Aim: Determine the cell constant of the conductivity cell by using 0.1N KCl solution and determine the concentration of each component in the given mixture of HCl + CH_3COOH in terms of normality by conductometric tiration.

Requirements:

0.1 N KCl

0.5 N NaOH

0.05 N HCl (as unknown concentration)

0.05 N CH_3COOH (as unknown concentration)

Marks Distribution

Arrangement + Systematic Working	6 Marks
Correct Cell Constant	6 Marks

Neatness –Observation table (at least 8 readings)	6 Marks
Correct Graph	6 Marks
Correct Normality	6 Marks
Total Marks	**30 Marks**

Exercise No. 13 Conductometry

Aim: Determine the Cell constant of the given cell and determine the normality of the given CH_3COOH by conductometric titration

Requirements:

Solid KCl solution

0.5 N NaOH

0.1 N CH_3COOH (as unknown concentration)

Marks Distribution

Arrangement + Systematic Working	6 Marks
Correct Cell Constant	6 Marks
Neatness –Observation table (at least 8 readings)	6 Marks
Correct Graph	6 Marks
Correct Normality	6 Marks
Total Marks	**30 Marks**

Exercise No. 14 Conductometry

Aim: Determine the Cell constant of the given conductivity cell and also determine normality of the given Ni^{+2} solution by conductometric titration.

Requirements:

0.1 M EDTA

0.1 M $NiSO_4$ (as unknown concentration)

Marks Distribution

Arrangement + Systematic Working	6 Marks
Correct Cell Constant	6 Marks
Neatness –Observation table (at least 8 readings)	6 Marks
Correct Graph	6 Marks
Correct Normality	6 Marks
Total Marks	**30 Marks**

Exercise No. 15 Conductometry

Aim: To determine the cell constant of the conductivity cell and the normality of '*X*' N $AgNO_3$ using 0.5 N NaCl by conductometric titration

Requirements:

Solid KCl

0.5 N NaCl

0.5 N $AgNO_3$ (as unknown concentration)

Marks Distribution

Arrangement + Systematic Working	6 Marks
Correct Cell Constant	6 Marks
Neatness –Observation table (at least 8 readings)	6 Marks
Correct Graph	6 Marks
Correct Normality	6 Marks
Total Marks	**30 Marks**

Exercise No. 16 Thermodynamics

Aim: To calculate entropy of vapourisation (ΔSv) of a given liquid by Kinetic approach i.e. from the graph of log (1/time) against (1/temperature).

Requirements

Benzene / $CHCl_3$ / CCl_4 / n-hexane

Marks Distribution

Systematic Working	4 Marks
Presentation & Observation	8 Marks
Graph	6 Marks
Calculations	8 Marks
Unit	2 Marks
Correct Result	2 Marks
Total Marks	**30 Marks**

Exercise No. 17 Refractometry

Aim: Determine the refractive index of given liquid A, B, C, D. and thus calculate the specific refractive index and molecular refractive index

Requirements:

Refractometer

Any four of the following liquids: Benzene, Toluene, Xylene, n-propyl alcohol, n-

butyl alcohol, chloroform, carbon tetrachloride, chlorobenzene

Marks Distribution

Systematic handling of Refractometer	4 Marks
Correct specific density	8 Marks
Correct refractive index	10 marks
Correct specific refractive index	4 marks
Correct specific molecular refractive index	4 Marks
Total Marks	**30 Marks**

Exercise No. 18 Refractometry

Aim: To prepare glycerine solution with a concentration of 10%, 5% & 2.5 % from the given glycerine solution and Determine the refractive index of given liquid of water and glycerol and thus calculate the specific refractive index and molecular refractive index.

Requirements:

Refractometer

Glycerine

Marks Distribution

Systematic handling of Refractometer	2 Marks
Correct specific density of all liquids	6 Marks
Correct refractive index of all liquids	7 Marks
Correct specific refractive index of all liquids	6 Marks
Correct specific molecular refractive index	3 Marks
Graph	3 Marks
% composition of the unknown	3 Marks
Total Marks	**30 Marks**

Exercise No. 19 Viscosity

Aim: Find relative and absolute viscosity of given pure liquids A, B, C & D by Ostwald's viscometer

Requirement:

Ostwald’s Viscometer

Specific gravity bottle

Benzene

Toluene

Carbon tetrachloride

Chloroform

Stopwatch

Marks Distribution

Systematic handling of Viscometer & Specific gravity bottle		3 Marks
Correct density of all the four liquids		6 Marks
Readings for water & all the liquids		8 Marks
Correct viscosity of all the four liquids		3 Marks
Correct relative & absolute viscosity		6 Marks
Systematic Tabulation of Readings		4 Marks
	Total Marks	**30 Marks**

Exercise No. 20 Viscosity

Aim: To prepare glycerine solution with a concentration of 10%, 5% & 2.5 % from the given glycerine solution and determine relative and absolute viscosity of given glycerine solution and unknown concentration by Ostwald's viscometer

Requirement:

Viscometer

Specific gravity bottle

Glycerine

Stopwatch

Marks Distribution

Systematic handling of Viscometer & Specific gravity bottle		5 Marks
Correct relative & absolute viscosity		7 Marks
Correct viscosity of all the concentrations		7 Marks
Graph		6 Marks
Concentration of the unknown solution		5 Marks
	Total Marks	**30 Marks**

Exercise No 21. Colorimetry

Aim: Determine the amount of Ni^{+2} in the given solution by colorimetric method.

Requirements:

Ni^{+2} solution: 0.500 gm Nickel sulphate or 0.673 gms nickel ammonium sulphate in 1 litre solution

Saturated Br_2 solution,

1 % alcoholic solution of DMG (Dimethylglyoxine)

1: 1 NH_3 solution

Green Filter

Note:

In a 100 ml measuring flask give the candidate 5 to 10 ml Ni^{+2} solution. As an unknown give 3, 5 or 7 ml.

Marks Distribution

Arrangement + Systematic Working	4 Marks
Preparation of dilute solutions	4 Marks
Correct OD and T %	10 Marks
Correct Graph (Two graphs)	6 Marks
Correct Concentration	6 Marks
Total Marks	**30 Marks**

Exercise No. 22. Colorimetry

Aim: To determine the amount of Fe^{+3} in the given solution by colorimetric method.

Requirement:

Ferric Ammonium Sulphate solution (0.3mg Fe /ml) in a 100 ml flask,

20% KCNS solution or 50 % NH_4CNS

2N HCl

Preparation of Ferric Ammonium Sulphate solution: Dissolve 2.6 gms of Ferric Ammonium Sulphate in 10ml Fe free dil HCl add distilled water and make up the volume to 1 litre (i.e. 0.3mg Fe /ml)

Preparation of 20% KCNS solution: 20 gms KCNS in 100 ml solution

Preparation of 50 % NH_4CNS solution: 50 gms NH_4CNS in 100 ml solution

Note:

In a 100 ml measuring flask give the candidate 5 to 10 ml Fe^{+3} solution. As an unknown give 3, 5 or 7 ml.

Marks Distribution

Arrangement + Systematic Working	4 Marks
Preparation of dilute solutions	4 Marks
Correct OD and T %	10 Marks
Correct Graph (Two graphs)	6 Marks

Correct Concentration	6 Marks
Total Marks	**30 Marks**

Exercise No. 23 Polarimeter

Aim : To determine specific rotation of the given dextrose solution of three different concentration (10%, 5%, 2.5%). Plot the graph of specific rotation against concentration and hence determine the unknown concentration.

Requirements:

Glucose, Tartaric acid or Sucrose

Marks Distribution

Arrangement + Systematic Working	4 Marks
Observations for angle of rotation & Neatness	8 Marks
Calculation of Specific Rotation	6 Marks
Graphs	6 Marks
Correct Readings	4 Marks
Correct Unknown concentration	2 Marks
Total Marks	**30 Marks**

Exercise No. 24 Polarimeter

Aim: To study the inversion rate of sugar in presence of 1N HCl and hence determine the rate constant for the inversion of cane sugar.

Requirements

1. Cane sugar
2. 1N HCl

Marks Distribution

Arrangement + Systematic Working	6 Marks
Observations for angle of rotation & neatness	8 Marks
Calculation of Rate constant	4 Marks
Graphs	6 Marks
Determination of order of reaction	4 Marks
Result	2 Marks
Total Marks	**30 Marks**