



HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Course Name : **B. Sc. Chemistry** Semester : **I**
PROGRAM CODE : **SCIUG102**
COURSE CODE : **SC23MDCCHE103**

Type of course : **Multidisciplinary Course MDC**

Name of course : **General chemistry I**

Total Marks : **50**

Effective from June 2023 Under NEP 2020

Total Credits : 02	Teaching Hours per Week: 02	Theory	External 25 Marks
	Teaching Hours per semester: 30		Internal 25 Marks

Course Objectives:

1. To study about the Chemical kinetics and types of reactions.
2. To know about the Volumetric titrations and calculations for estimation.

Course Outcomes:

1. Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
2. Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.
3. Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.
4. Students will be able to function as a member of an interdisciplinary problem solving team.

Unit	Topic	Credit	Hr
1	Chemical Kinetics. Introduction : Rate of reaction, Order of reaction, Molecularity, Rate equation for zeroth order reaction, Rate equation for first order	1	15



	reaction, Characteristics of first order reaction, Rate equation for second order reaction.(a = b) & (a≠b); Characteristics of second order reaction, Rate equation for third order reaction (a = b = c) ; Characteristics of third order reaction, Consecutive reaction, Parallel reaction, Reversible reaction, Numerical.		
2	Analytical Chemistry ZMH Introduction to Analytical Chemistry : Classification of Classical and Electro analytical Techniques, Literature of Analytical Chemistry (Names of Author and Publishers for Any Ten Books, Journals and Reviews), Criterion for Selection of analytical Techniques, Define: Accuracy, Precision, Specification, Detection limit, Characterization limit, Linearity, Range, Robustness, etc. Analytical Data Treatment: Error, Types of errors, Accuracy and Precision. Statistical Terms: Mode, Average, Median, Deviation, Average Deviation, Relative Average Deviation, Standard Deviation & Coefficient of variance. Q-Test for the rejection of result and related numerical, Significant figures, 2.5 d and 4.0 d rules.	1	15

Books Recommended:

Physical Chemistry

1. Advance Physical Chemistry by Gurdeep raj.
 2. Physical Chemistry (Question and Answer) by R.N.Madan, G.D.Tuli..S.Chand.
 3. Principal of Physical Chemistry by Puri Sharma, Pathania.
- Chemical Thermodynamics by R.P.Rastogi and R.R.Misra.

Analytical Chemistry

1. Fundamentals of Analytical Chemistry by Skoos& West.
2. Analytical Chemistry, Garry D.Christain.
3. Analytical Chemistry, Day & Underwood.
4. Analytical Chemistry by Lerry&Hergins.
5. Qualitative Analysis by A.I.Vogel, 5thedn.

Further Reading:

1. Reaction Mechanism and Reagents in Organic Chemistry, GurdeepR.Chatwal 4thedn, Himalaya Publication House.
2. Text book of Organic Chemistry, ArunBahal, S.Chand.



3. Organic Chemistry, R.Morrison and R.Boyd, 6thedn, Pearson Education 2003.
4. Organic Chemistry. T.W.GrahamSolomons, 4thedn. John Wilay. 1998.
5. Nuclear Chemistry by C.V.Shekhar, Dominent-Publisher. New Delhi.
6. Essentials of physical Chemistr by B.S.Bahal, ArunBahal. G. D.Tuli.
7. Physical Chemistry by P.W.Atkins. 5th edn.Oxferd 1994 7thedn-2002.
8. Physical Chemistry b R.A.Albert and RJ. Silby, John Wiley 1995.
9. Physical Chemistry by G.H.Barrow. 5thedn, Mac GrawHill . 1988. 6thedn. 1996.
10. Physical Chemistry by W.J.Moore. 4thedn. Orient Longmans 1969.


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Program Name : **B. Sc. Chemistry** Semester : **I**
PROGRAM CODE : **SCIUG102**
COURSE CODE : **SC23PMDCCHE103**

Type of course : **Practicals Multi Disciplinary Course PMDC**
Name of course : **Practical's for General chemistry I**
Total Marks : **50**

Effective from June 2023 Under NEP 2020

Total Credits : 02	Teaching Hours per Week: 04	Practicals	External 25 Marks
	Lab Teaching Hours per semester: 60		Internal 25 Marks
Minimum Number Practicals to be Performed: 10			

Course Objectives:

1. To identify the organic components.
2. Preparation of solutions and their standardization.

Course Outcomes:

1. Students will gain a comprehensive knowledge and skills in standardization and preparation of solutions for carrying out reactions.
2. To understand basic methods to identify the compounds on the basis of M. Pt or b. Pt.

Sr.No.	List of Practicals	Credit	Hr
1	Organic Chemistry (Any six) 1) Identification of an organic compound through the functional group analysis, Determination of melting point and boiling point. Preparation of suitable derivative. 2) Candidate should perform the analysis of at least 06 compounds. List of compounds Acids: Benzoic acid. Cinnamic acid, Phthalic acid. Oxalic acid. Succinic acid. Phenols: α -Naphthol. β -Naphthol. Bases: <i>p</i> -Toluidine, Diphenylamine. Aniline. Methyl aniline. Neutrals: Naphthalene, Anthracene, Acetamide, Benzamide, Acetanilide, <i>m</i> -Dinitrobenzene, Urea, Thiourea, Toluene. Acetone,	1	30



	Benzaldehyde, Methy acetate, Ethyl acetate.Ethanol, 1-Propanol, Glycerol, Chloroform.Carbon tetrachloride, Chlorobenzene, Nitrobenzene.		
2	Standardization (Any Four) 1) Preparation of standard solution of succinic acid and standardization of NaOH / KOH 2) Preparation of standard solution of $\text{Na}_2\text{S}_2\text{O}_3$ and standardization of I_2 solution. 3) Preparation of standard solution of EDTA and estimation of $\text{Ca}^{+2} / \text{Mg}^{+2}$ in $\text{CaCl}_2 / \text{MgCl}_2$ solution. 4) Preparation of standard solution of Oxalic acid and standardization of KMnO_4 solution. 5) Preparation of standard solution of $\text{K}_2\text{Cr}_2\text{O}_7$ and standardization of FeSO_4 solution. 6) Preparation of standard stock (i.e. 0.1 N NaOH solution by w / v method and their different dilutions. 7) Preparation of standard stock solution of HCl by v/v method and their different dilutions.	1	30

Books Recommended:

1. Practical Chemistry : For B.Sc. I, II And III Year Students of All India Universities By Pandey O.P. & et Al. publisher S. Chand's, Paperback December 2010.

2. Basic Principles of Practical Chemistry,

by V. Venkateswaran (Author) publisher S. Chand's, Paperback – 1 January 2012

3. Chemistry In Laboratory-B.Sc.-Sem-I-Vi-Hons.

By Dr.Subhojit Ghosh (Author), Dr.Madhushree Das Sharma (Author), publisher CBCS, Paperback – 1 January 2019.

Further Reading:

1. Practical Chemistry, By Sonia Ratnani (Author), Swati Agrawal (Author), Sujeet Kumar Mishra (Author) publisger Mc Graw Hill, 1st Edition Paperback – 16 September 2020.

2. B.Sc. Practical Chemistry First Year By Paperback, Dr. M.M.N. Tandon, Publisher: Shiva Lal Agarwal & Company, 2020.