B.Sc. V SEMESTER			
Part-A: Introduction			
Program: Diploma Course		**Session- 2024-25**	
1.	Course Code	**CHSC-5T**	
2.	Course Title	**Essentials of Chemistry-1**	
3.	Course Type	**Discipline Specific Course**	
4.	Pre-requisite (if any)	To study this course our students must have had the subject chemistry in Certificate Course	
5.	Course Learning Outcome(CLO)	At the end of this course, the students will be able to learn the following aspects of chemistry	
		• **Co-ordination Compounds,** • **Thermodynamic and Kinetic Aspects of Metal Complexes**	
		• **Amino Acids** • **Carbohydrates**	
		• **Photochemistry**	
		• **Electrochemistry**	
6.	Credit Value	3	
7.	Total Marks	Max. Marks:	100 (80+20)

Part-B: Content of Course		
Unit	**Topic**	**No. Of Hours**
I	**(A) Co-ordination Compounds:** Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes. Limitations of valence bond theory, **(B) : Thermodynamic and Kinetic Aspects of Metal Complexes:** A brief outline of thermodynamic stability of metal complexes and factors affecting the stability ,substitution reactions of square planar complexes.	**10**
II	**(A) Amino Acids:-** Classification *of Amino Acids,* Zwitter ion structure and Isoelectric point. Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins, Synthesis of simple peptides. (B) **Carbohydrates:-** Classification of carbohydrates, reducing and non reducing sugars, General Properties of Glucose and Fructose, their open chain structure. Epimers, mutarotation and anomers. Determination of configuration of Glucose .Cyclic structure of glucose. Haworth projections.	**11**
III	**Photochemistry:** Interaction of radiation with matter, difference between thermal and photochemical processes, Laws of photochemistry :	**12**

	Grothus- Drapper law. Stark- Einstein law, Jablonski diagram depicting various processes occurring in the exited state, qualitative description of fluorescence, phosphorescence, non- radiative processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions- energy transfer processes (simple examples)	
IV	**Electrochemistry:** **(a)** Electrolyte conductance: specific and equivalent conductance, measurement of equivalent conductance, effect of dilution on conductance, Kohlrausch law,application of Kohlraush law in determination of dissociation constant of weak electrolyte, solubility of sparingly soluble electrolyte, absolute velocity of ions, ionic product of water, conductometric titrations. **(b)** Theory of strong electrolyte : limitation of Ostwald's dilution law weak and strong elecrolyte, Debye-Huckel-Onsager's(DHO) equation for strong electrolytes, relaxation and electrophoretic effect. **(c)** Migration of ions : Transport number-definition and determination by Hittorf method and moving boundary method.	**12**

PART-C

LEARNING RESOURCES

***REFERENCE BOOKS*:**

1. Basic inorganic chemistry; F.A. Cotton, G. Willkinson and P. I. Gaus, J.wiley.
2. Concise inorganic che mistry; J. D. Lee, ELBS.
3. Concepts of Models of Inorganic Chemistry;B. Douglas, D. Medaniel and J. Alexander. J. Wley.
4. Inorganic Chemistry;D.E. Shriver, P. W. Atkins and C. H. Langford, oxford.
5. Inorganic chemistry ; W.W. Porterfield, Addison-wesley.
6. Inorganic chemistry ; A.G. Sharp, ELBS.
7. Advance inorganic chemistry ;Puri & Sharma , S. Naginchand.
8. Selected topics in inorganic chemistry ; Madan Malik &Tuli ,S. Chand
9. Physical Chemistry; G. M. Barrow, McGraw Hill.
10. University General Chemistry; C. N. Rao. Macmillan.
11. Physical Chemistry; R. A. Alberty, Wiley Estern.
12. The Element of Physical Chemistry; P. W. Atkin, Oxford
13. Physical chemistry through problems;Droga &Droga,Wiley Estern
14. Bhautik Rasayan ; P. L. Soni.
15. Physical Chemistry B.D. Khosla.Physical Chemistry ; Puri &Sharma
16. Organic Chemistry ; Morrison and Boyd, Prentice Hall.
17. Organic Chemistry; L. G.Wade ,Prentice Hall.
18. Fundamental of Organic Chemistry; Solomons ,J. Wiley.
19. Organic Chemistry, Vol. I,II, &III; Mukharjee, Singh & Kapoor, Wiely Estern (New Age).
20. Organic Chemistry ; F.A. Carey, McGraw Hill.
21. Organic Chemistry ;P.L.Soni
22. Organic Chemistry; Bahal& Bahal.

E-learning Resources: