



बिरसा मुंडा ट्रायबल युनिवर्सिटी

Birsa Munda Tribal University

राजपिपला, जि. नर्मदा Rajpipla, Dist. Narmada

Established by Tribal Development Department, Govt. of Gujarat

School of Science

B.Sc. (Chemistry) Programme

Subject Code & Name: - BS01MJCHE2: General Chemistry-II

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
3	-	1	4	37.5 %	12.5 %	37.5 %	12.5 %

Programme Name	B.Sc. (Chemistry)
Semester	I
Course Code	BS01MJCHE2
Course Title	General Chemistry-II
Course Content Type (Th./Pr.)	Theory & Practical
Course Credit	3+1
Sessions+ Lab. Per Week	3+2
Total Teaching/Lab. Hours	45 Theory Hours + 30 Practical Hours
* 2 Laboratory = 1 Session	

Learning Objectives

1. Understand that elements are placed on the periodic table due to similar properties. Identify a period and a group on the periodic table.
2. Get information about energy level diagram of diatomic molecules.
3. To write IUPAC nomenclature of alkyl halides.
4. To understand different nucleophilic substitution reactions.

Learning Outcomes

On the Completion of this course, students will able to:

1. Students can understand electronic configuration of elements, shape of orbitals, nodes and nodal plane.
2. Calculate bond order and magnetic properties by the help of energy level diagram.
3. Get information about how nucleophilic reactions can occur.
4. Understand about different name reactions.
5. Get information about polyhalogen compounds, their properties and uses.





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Detailed Contents		
UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	Periodicity <ul style="list-style-type: none">➤ Study of modern periodic table, electronic configuration in periodic table, Periodicity in atomic properties and its causes, Magic number➤ Explanation of general trends of periodic properties<ul style="list-style-type: none">(1) Atomic radii (covalent, metallic and van der Waals radii)(2) Calculation of Ionic radii by Pauling method(3) Ionization potential(4) Electron gain enthalpy(5) Electronegativity➤ Calculation of Electronegativity by Mulliken and Pauling method.➤ Periodic Trends in Chemical Properties,<ul style="list-style-type: none">(a) Periodicity of Valence or Oxidation States(b) Anomalous Properties of Second Period Elements, Periodic Trends and Chemical Reactivity	15
II	Aliphatic Hydrocarbons-I and alkyl halides <ul style="list-style-type: none">➤ IUPAC Nomenclature of alkyl halide➤ Free radical substitutions reactions➤ Preparation of alkyl halides➤ Alkanes: Formation of alkanes by Wurtz reaction, Wurtz-Fittig, Grignard, fitting reaction➤ Only Introduction of two types (SN^1 & SN^2) of mechanism and difference between SN^1 & SN^2➤ Poly halogen, hydrocarbon and its application	15





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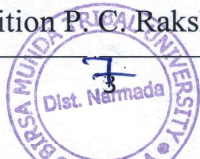
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III	<p>Chemical bonding</p> <ul style="list-style-type: none">➤ Basics of Covalent bond, Ionic bond, Co-ordinate covalent bond and H- bonding➤ octet rule and its limitation➤ Lewis Structure, Bond Length, Bond order, Bond Angle Geometry and its shapes of Molecule➤ Valence bond theory and its limitations➤ Sidgwick Powell rule and VSEPR theory,➤ Concept of hybridization: SP, SP^2, SP^3, SP^3d & SP^3d^2➤ MO theory and its application➤ Energy level diagrams of B_2, C_2, N_2, O_2, F_2, CO, and NO calculation of bond order and magnetic properties.	15
Unit – IV Practical(s)		30 Hours
<p>Qualitative analysis of inorganic salts (Minimum 08 salts-containing two radicals)</p> <p>Inorganic salts containing anion (chloride, bromide iodide, nitrate, nitrite, sulphate, sulphite, sulphide, carbonate, phosphate (soluble & insoluble), oxide, chromate, and dichromate</p>		
<p>Reference Books</p> <ol style="list-style-type: none">1. Principles of Inorganic chemistry- B. R. Puri, L. R. Sharma and K. C. Kalia; Vallabh publications, Delhi.2. Coordination chemistry-Ajai Kumar ; Aaryush Education, U.P.3. Inorganic Chemistry - J. N. Gurtu & H. C. Khera4. Basic Inorganic Chemistry – Gurdeep & Chatwal.5. Organic Chemistry, Vol-1, Jagdamba Singh, L. D.S. Yadav, Pragati Prakashan, 8th edition-20136. Organic Chemistry by Morrison and Boyd.7. Organic Reaction Mechanism, including Reaction Intermediates, V. K. Ahluwalia8. Essentials of Physical Chemistry, B. S. Bahl, G. D. Tuli and Arun Bahl, S. Chand & Co.9. Elements of Physical Chemistry, B. R. Puri, L. R. Sharma and Madan Pathania, Vishal Publishing Co. Jalandhar.10. Physical Chemistry, B. K. Sharma, Goel Publication House. Meerut.11. Physical Chemistry, 7th edition P. C. Rakshit		





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L:: Lecture, **T::** Tutorial , **P::**Practical

CCE:: Continuous and Comprehensive Evaluation

(CCE Theory includes Mid Semester Examination, Assignment, MCQ quizzes, Seminar, Reflective notes, class participation, case analysis and presentation, slip tests (announced/ surprised), attendance etc. or any combination of these)

PWE:: Practical Work Examination

(PWE includes Laboratory practical work, project work, viva simulation exercise work etc.)

SEE:: Semester End Evaluation

