



**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Syllabus for Diploma in Vocation (D.Voc), 1<sup>st</sup> Semester**  
**Branch: Automobile Servicing/Software Development**  
**Subject Name: Applied Chemistry**  
**Subject Code: 1210102**

**With effective  
from academic  
year 2018-19**

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	OJT		Theory		Tutorial/ Practical		
			University exams (ESE)	Progressive Assessment (PA)	External Practical /viva Exam (ESE)	Internal evaluation Practical /viva Exam (PA)		
3	-	-	3	50	-	-	-	50

L- Lectures; T- Tutorial; OJT- On Job Training is equivalent to Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

**Content:**

Sr. No.	Content	Hrs.
1	<b>Structure of Atom:</b> Rutherford model of the structure of atom, Bohr's theory of electrons, quantum numbers and their significance, de-Broglie equation and uncertainty principle, electronic configuration of 1 to 30 elements	6
2	<b>Periodic Properties of Elements:</b> Periodic law, periodic table, periodicity in properties like atomic radii and volume, ionic radii, ionization energy and electron affinity, Division of elements into s, p, d and f blocks	6
3	<b>Chemical Bonds:</b> Electrovalent, covalent and coordinate bond and their properties, Metallic bonding (electron cloud model) and properties (like texture, conductance, luster, ductility and malleability).	6
4	<b>Fuel and their Classification:</b> Definition, characteristics, classification into solid, liquid and gaseous fuel, Petroleum and brief idea of refining into various fractions and their characteristics and uses, Calorific value of fuel, Gaseous fuels- preparation, properties, composition and use of producer gas, water and oil gas.	6
5	<b>Water:</b> Impurities in water, methods of their removal, hardness of water, its types, causes and removal, disadvantages of hard water in boilers, pH value and its determination by calorimetric method.	6
6	<b>Corrosion:</b> Its meaning, theory of corrosion, prevention of corrosion by various methods using metallic and non-metallic coatings	6
7	<b>Plastic and Polymers:</b> Plastic-thermo-plastic and thermo-setting, Introduction of Polythene. P.V.C. Nylon, synthetic rubber and phenol-formaldehyde resin, their application in industry.	6
	<b>Total</b>	42



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**Suggested Specification table with Marks (Theory):**

<b>Distribution of Theory Marks</b>				
R Level	U Level	A Level	N Level	E Level
5	20	15	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate and above Levels (Bloom's Taxonomy)

**Reference Books:**

1. Engineering Chemistry by Jain and Jain Publisher, Dhanpat Rai Publishing Co.
2. Engineering Chemistry by Dr. O.P. Agrawal, Khanna Publishers Delhi.
3. Organic Chemistry by Bahl and Bahl., S Chand & Co. Ltd.
4. Essential of Physical Chemistry by Bahl and Tuli, S Chand & Co. Ltd, New Delhi.

**Course Outcomes:**

After learning the course the students should be able

1. To build a basic knowledge of the structure of chemistry.
2. To analyze scientific concepts and think critically.
3. To review the importance and relevance of chemistry in our everyday life.
4. To be able to utilize the methods of science as a logical means of problem solving.