**Lesson Plan**

Name of the Faculty : Ms Monika Khatkar (Visiting Faculty)

Discipline : Medical Lab Technology

Year : 1st Year

Subject : Basic chemistry

Lesson Plan : 30 weeks (from July2018 – April 2019)

Work load (lecture/practical) per week (in hours) : Lectures-02, practicals-02

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| **Week** | **Theory** | **Practical** |
| **Lecture****day** | **Topic(including assignment test)** | **Practical****Day****(1 lab=2 hours )** | **Topic** |
| 1st | 1st  | Introduction to the whole syllabus of Basic Chemistry | 1st & 2nd | Volumetric analysis and study of apparatus used therein. Simple problems on volumetric analysis equation |
| 2nd  | Basic Concepts of Chemistry Definition of chemistry and its importance |
| 2nd | 3rd | S.I. Units of pressure, volume, density, specific gravity, surface tension and viscosity | 3rd &4th | Preparation of standard solution of oxalic acid or potassium dichromate |
| 4th  | Matter, element, compound and mixtures, atoms, molecules, ions, symbols and formulae (recapitulation only) |
| 3rd | 5th  | symbols and formulae (recapitulation only) | 5th &6th | Determine the strength of solution of HCl with the help of a solution of NaOH and an intermediate solution of standard oxalic acid |
| 6th  | Writing chemical formulae of simple chemical compounds |
| 4th | 7th  | calculation of percentage composition of chemical compounds | 7th & 8th | Estimation of total dissolved solids (TDS) in water sample gravimetrically |
| 8th  | Chemical equations, thermo-chemical equations |
| 5th | 9th  | balancing of chemical equations by HIT and TRIAL method | 9th & 10th | Estimation of total alkalinity of water volumetrically |
| 10th  |  Assignment 1-Atomic Structure and Chemical Bonding , Introduction to atom and its constituent particles |
| 6th | 11th  | Dalton’s atomic theory, Rutherford’s and Bohr’s model of atom | 11th &12th | viva |
| 12th  | Atomic number, mass number, isotopes, isobars and isotones |
| 7th | 13th  | Concept of atomic orbitals, shapes of s and p- orbitals, quantum numbers | 13th & 14th | Determine the pH of given sample using pH meter |
| 14th  | Aufbau principle, Pauli’s exclusion principle |
| 8th | 15th  | Hund’s rule and electronic configuration of elements (upto Z=30) | 15th & 16th | Determine the percentage purity of commercial sample like blue vitriol, 12.5 g. of which have been dissolved per litre. Given M/20 Na2S2O3 |
| 16th  | Chemical bond, types of chemical bonding: ionic and covalent |
| 9th | 17th  | Sources of water, Types of water based on dissolved salts. | 17th&18th | viva |
| 18th  | Hard water, soft water , Units to measure water hardness in ppm simple numericals, degree Clark & degree French |
| 10th | 19th  | Disadvantages of use of hard water in domestic and industrial applications | 19th&20th | Determination of solubility of a solid at room temperature |
| 20th  | Methods to remove water hardness by , Ion exchange process , Lime-soda process |
| 11th | 21st  | Reverse Osmosis method 3.5 Quality criteria of drinking water as per BIS |
| 22nd  | Concept of homogenous solution, brief introduction of the terms (i) Ionization (ii) Acidity (iii) Basicity | 21st&22nd | To verify the first law of electrolysis (electrolysis of copper sulphate solution using copper electrode |
| 12th | 23rd  | equivalent weight and gram equivalent weight with suitable examples 4.2 Strength of a solution (i) Normality (ii) Molarity | 23rd&24th | VIVA |
| 24th  | Molality as applied in relation to a solution. Definition of pH |
| 13th | 25th  | simple numericals and different industrial applications of pH. Buffer solution and applications of buffer. | 25th&26th |  Iodometric titration |
| 26th  | Electronic concept of oxidation and reduction 5.2 Definition of the terms: Electrolytes, Non-electrolytes |
| 14th | 27th  | Faraday’s Laws of Electrolysis and simple numericals Different industrial applications of ‘Electrolysis | 27th &28th | Oxidation reduction titration |
| 28th  | Applications of redox-reactions in battery technology such as (i) Dry cell (ii) lead acid battery and (iii) Ni-Cd battery |
| 15th | 29th  | Brief introduction to Environmental Chemistry and Pollution | 29th&30th | viva |
| 30th  | Causes and effects of air, water and soil pollutions |
| 16th | 31st  | Role of chemistry in controlling air, water and soil pollutions | 31st&32nd | Acid-base titrations |
| 32nd  | General idea of ozone depletion, global warming |
| 17th | 33rd | General idea of ozone depletion, global warming | 33rd&34th | Estimation of carbohydrates by benedicts methods  |
| 34th  | introduction and importance of organic compounds,comparison of organic and inorganic compounds |
| 18th | 35th  | Properties of carbon and hydrogen | 35th&36th | VIVA |
| 36th  | Properties of carbon and hydrogen |
| 19th | 37th  | IUPAC nomenclature-Hydrocarbons,Alcohols | 37th&38th | Estimation of proteins by acitic acid |
| 38th  | IUPAC-Ethers,Aldehydes and ketones |
| 20th | 39th  | IUPAC-carboxylic acids and revision | 39th&40th | VIVA |
| 40th  | preparation ,properties and uses of saturated hydrocarbons |
| 21st | 41st  | Preparations,properties and uses of unsaturated hydrocarbons | 41st&42nd | Revision of experiments |
| 42nd  | Uses of saturated & unsaturated hydrocarbons |
| 22nd | 43th  | Sources of hydrocarbons | 43rd&44th | VIVA |
| 44th  | Preparation ,properties and uses of halogen derivatives of hydrocarbons |
| 23rd | 45th  | Introduction,classification,preparation and properties ,uses of Methyl alcohol | 45th&46th | Estimation of proteins by salphosalicyclic acid |
| 46th | Introduction,classification,preparation and properties ,uses of Ethyl alcohol |
| 24th | 47th | Introduction,classification,preparation and properties ,uses of glycerol | 47th&48th | Estimation of lipids by direct method |
| 48th | Introduction ,classification,preparation and properties ,uses of Diethyl Ether,methanol,ethanal |
| 25th | 49th | Amines-structure of amines groups-primary,secendory,tertiary | 49th&50th | Acid base experiment doubt |
| 50th | Important methods,preparation and properties of Amines |
| 26th | 51th | Introduction,classification,preparation,properties ,uses of Methanoic acid,ethanoic acid | 51st&52nd | Revision of experiments |
| 52th | carbohydrates-definition,composition,classification |
| 27th | 53th | monosaccharides,disaccharides,polysaccharides | 53rd&54th | Titrations overview |
| 54th | Lipids-definition,classification |
| 28th | 55th | Introduction to fatty acids,phospholipids,triglycerides | 55th&56th | Viva voice |
| 56th | Cholesterol and clinical importance of lipids |
| 29th | 57th | Proteins-classification,composition,molecular,structure,properties of amines ,Clinical importance of proteins | 57th&58th | Doubt session |
| 58th | enzymes-definition,classification,chemical nature,factors affecting,clinical importance |
| 30th | 59th | Doubt class | 59th&60th | Viva voice |
| 60th | Revision |