

MANARAT STEM FEST

2021

BIO-CHEM OLYMPIAD SYLLABUS

CLASS 7-8

1. Chemistry

- Atoms, elements and compounds Periodic table
- Noble gases
- Group 1 and 7 properties
- Isotope
- Formula
- Relative masses of atoms and elements Mole and Avogadro constant
- Solid, liquid and gases
- Diffusion
- Physical and chemical changes
- Acids and bases
- Oxides
- Preparation of salt
- Fertilizer
- Redox
- Air and climate
- Metals
- Reactivity series
- Separation and purification Experimental design

2. Biology

- Cells
- Specialized cell
- Classification
- Movement in and out of cell
- Enzyme
- Biological
- Digestion and human nutrition 8. Photosynthesis and plant nutrition Transport in flowering plant
- Human gas exchange

CLASS 9-10

1. Chemistry

- States of matter
- Atoms, elements and compounds Stoichiometry
- Electrochemistry
- Chemical energetics
- Chemical reactions
- Acids, bases and salts
- The Periodic Table
- Metals
- Organic chemistry
- Experimental techniques and chemical analysis

2. Biology

- Cells
- Movement into and out of cells
- Biological molecules with structure
- Enzymes
- Plant nutrition
- Transport in flowering plants
- Human nutrition
- Human gas exchange
- Respiration
- Transport in humans
- Disease and immunity
- Coordination and control
- Coordination and response in plants Development of organisms and continuity of life
- Inheritance
- Biotechnology and genetic modification

CLASS 11-12

1. Chemistry

- Atomic structure
- Atoms, molecules and stoichiometry Chemical bonding
- States of matter
- Chemical energetics
- Electrochemistry
- Equilibria
- Reaction kinetics Inorganic chemistry The Periodic Table: chemical periodicity
- Group 2
- Group 17
- Nitrogen and sulfur
- Introduction organic chemistry Hydrocarbons
- Halogen compounds
- Hydroxy compounds
- Carbonyl compounds
- Carboxylic acids and derivatives Nitrogen compounds
- Polymerisation
- Organic synthesis Analysis
- Chemistry of transition elements

CLASS 11-12

2. Biology

- Cell structure
- Biological molecules
- Enzymes
- Cell membranes and transport
- The mitotic cell cycle
- Nucleic acids and protein synthesis
- Transport in plants
- Transport in mammals
- Gas exchange
- Infectious diseases
- Immunity
- Energy and respiration
- Photosynthesis
- Homeostasis
- Control and coordination
- Inheritance
- Selection and evolution
- Classification, biodiversity and conservation
- Genetic technology