

NATIONAL PRINITALENT OLYMPIAD EXAMINATIONS

SCIENCE

CLASS VII

PHYSICS

Matter

- Composition of matter
- Characteristics of matter
- States of matter
- Properties of solid, liquid and gas
- Molecular model of solid, liquid and gas
- Change in states of matter

Physical quantities and measurement

- Measurement and its importance
- Basic physical quantities
- Measurement of length, devices for measuring length
- Measurement of mass, devices for measuring mass
- Measurement of time
- Measurement of temperature
- Measurement of area
- Measurement of volume
- Measurement of regular solids and irregular solids
- Measurement of density



Force and motion

- Rest and motion are relative
- Types of motion
- Scalar and vector quantities
- Speed (measurement of speed)
- Mass and weight
- Force and effects of force
- Kinds of force (contact and non-contact)
- Force of friction
- Kinds of friction (static, sliding, rolling)
- Ways to reduce friction
- Advantages and disadvantages of friction
- Ways to increase friction

Simple machines

- Principle of a machine
- Efficiency of a machine
- Functions of simple machine mechanical
- Levers, types of levers
- Pulley, mechanical advantage of pulley,
- Wheel and axle
- Inclined plane
- Wedge and screw
- Care of machines

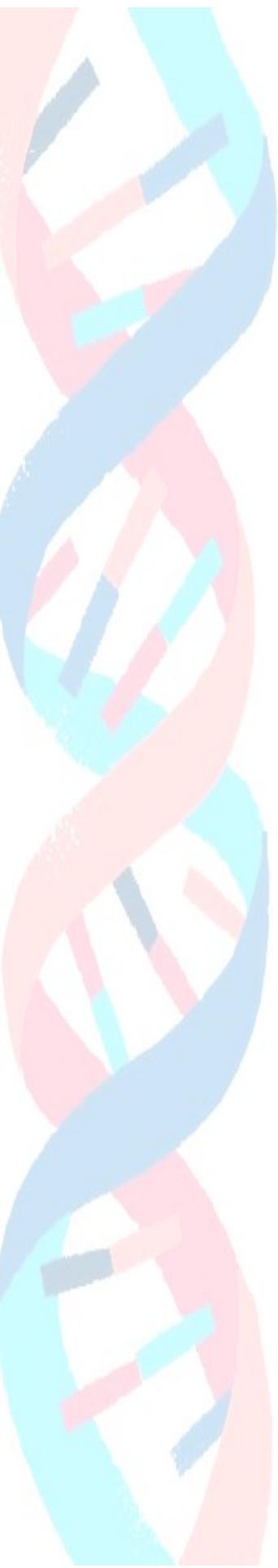


Light energy

- Rectilinear propagation of light and its applications
- Shadow (formations of umbra and penumbra)
- Eclipses (lunar eclipse and solar eclipse)
- Reflection
- Laws of reflection
- Image formed by a plane mirror
- Speed of light
- Primary colours
- Complementary colours
- Colour subtraction

Magnetism

- Discovery of magnets
- Natural and artificial magnets
- Characteristics of a magnet, poles exist in pairs
- Magnetic field and earth's magnetic field
- Making a magnet
- Temporary and permanent magnets
- Making of electromagnet and its uses
- Care and storage of magnets
- Demagnetization of magnets



CHEMISTRY

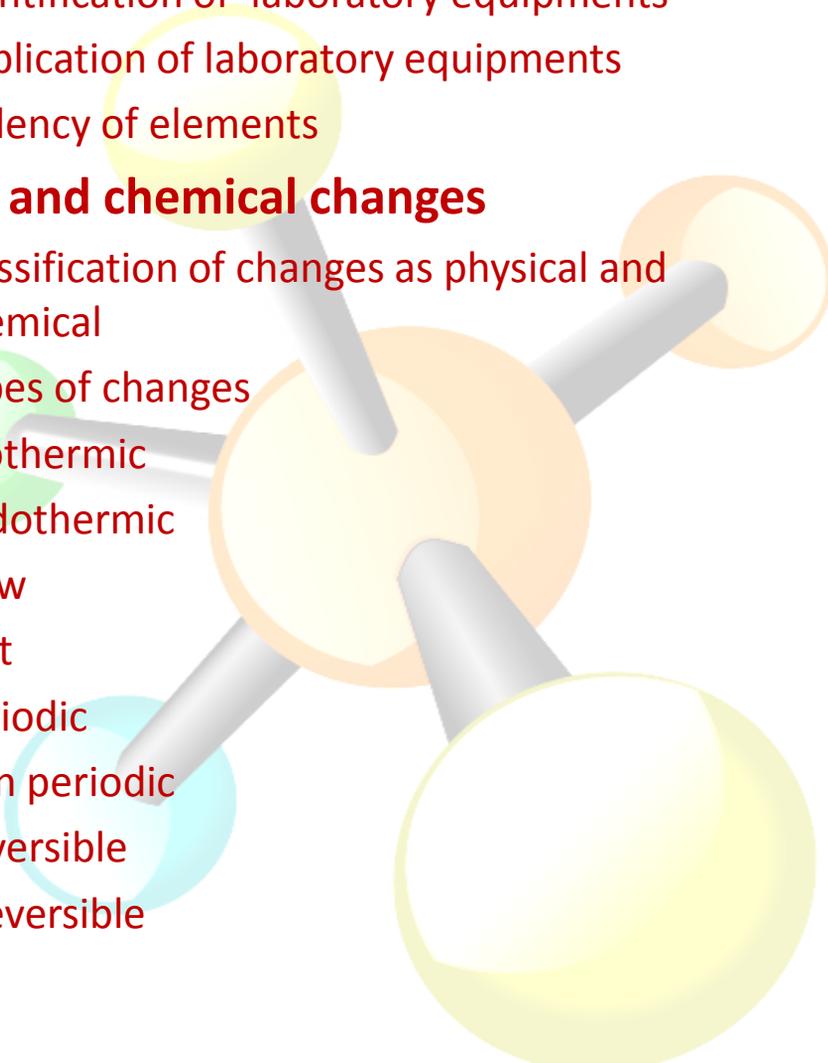
Language of chemistry

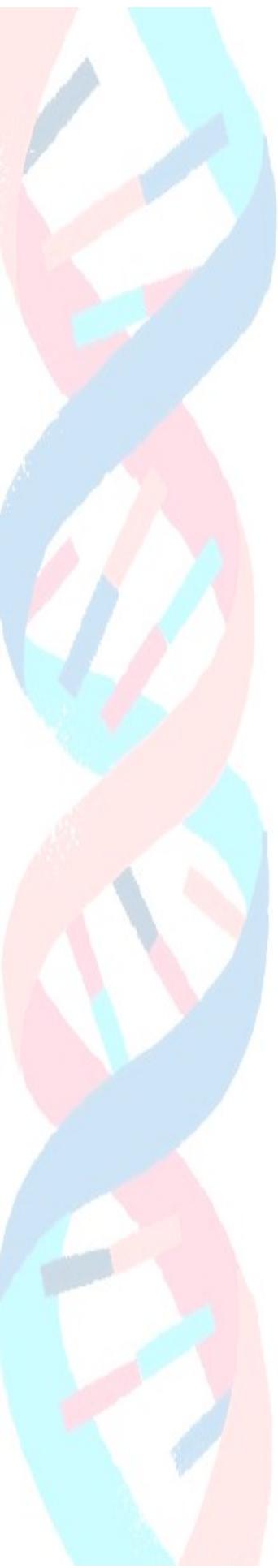
- Scientists and their contribution to chemistry
- Application of chemistry
- Harmful effects of chemistry

Common lab equipments and apparatus

- Identification of laboratory equipments
- Application of laboratory equipments
- Valency of elements

Physical and chemical changes

- Classification of changes as physical and chemical
 - Types of changes
 - Exothermic
 - Endothermic
 - Slow
 - Fast
 - Periodic
 - Non periodic
 - Reversible
 - Irreversible
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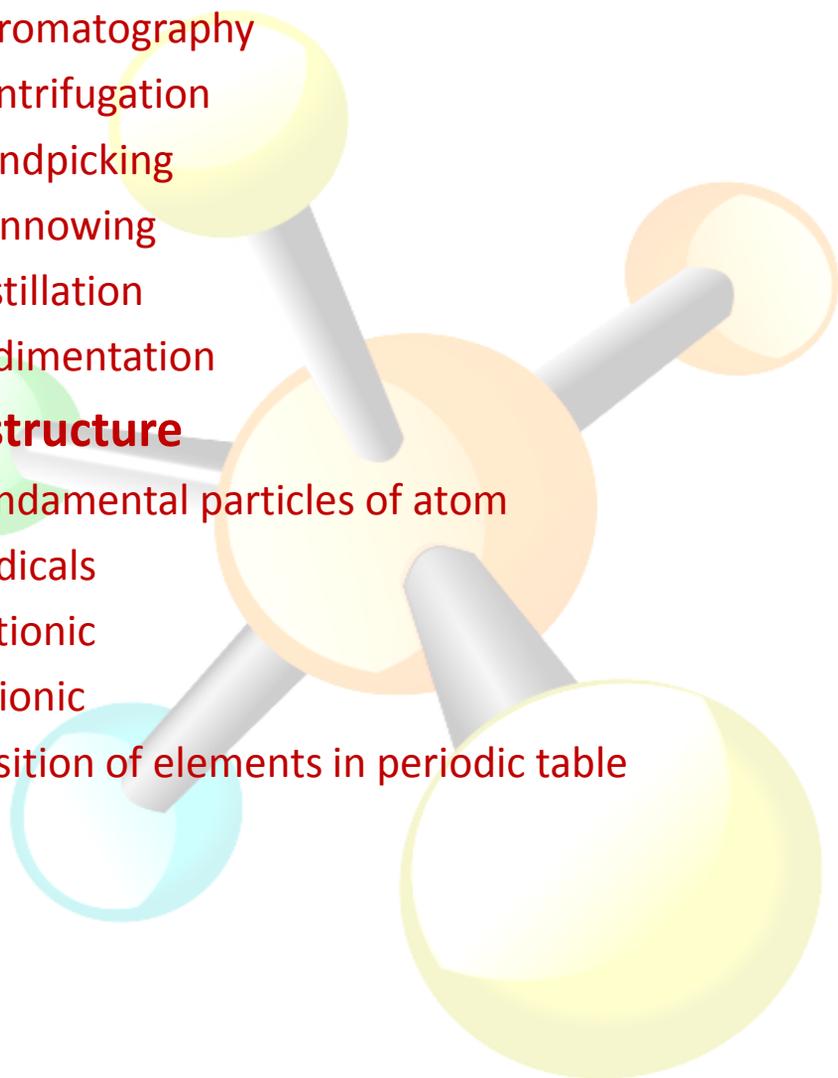


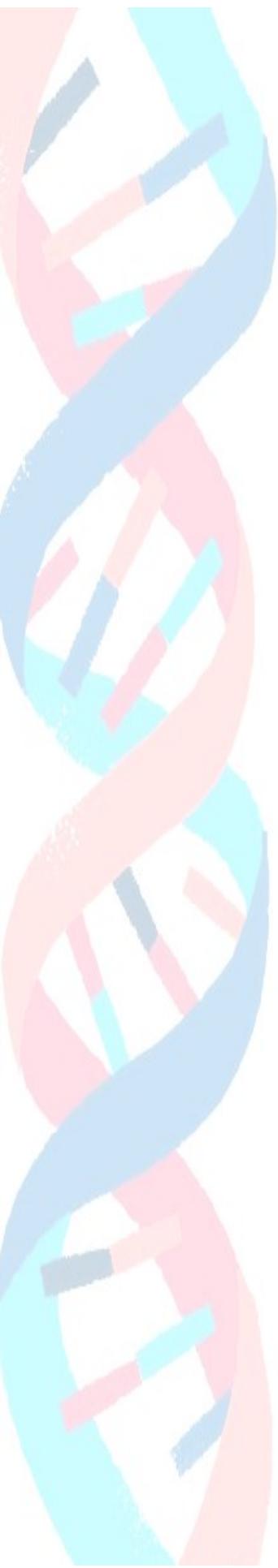
Elements ,compounds and mixtures

- Latin name and common name of elements with symbols
- Chemical formula of compound
- Valency
- Separation of mixtures
- Crystallization
- Chromatography
- Centrifugation
- Handpicking
- Winnowing
- Distillation
- Sedimentation

Atomic structure

- Fundamental particles of atom
- Radicals
- Cationic
- Anionic
- Position of elements in periodic table





BIOLOGY

Classification of animals:

- Vertebrates
- Invertebrates

Structure and function of plants:

- Root system
- Shoot system
- Leaves : types and modification
- Flower: parts and their functions
- Pollination and fertilization

Five kingdom of classification:

- Classification system and its need
- Five kingdoms

Health:

- Balanced diet
- Water
- Personal cleanliness
- First aid, pollution
- How disease spread, steps to avoid infection

Environment:

- Earth
 - The environment
 - Interaction of the components
 - Food chain and web
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