

NATIONAL PRIMAENT OLYMPIAD EXAMINATIONS

SCIENCE

CLASS IX

PHYSICS

Physical quantities and measurement

- Measurement of volume
- Measurement of density
- Relative density
- Factors affecting density
- Laws of floatation
- Speed

Force and pressure

- Types of motion
- Scalar and vector quantities
- Mass and weight
- Force and its turning effect
- Concept of pressure
- Pressure in liquids
- Atmospheric pressure

Energy

- Forms of energy
- Energy transformation
- Sources of energy
- Conservation of energy
- Work and energy
- Differences between energy and power

Heat

- Measurement of heat and temperature
- Effects of heat
- Thermal expansion
- Transfer of heat



Light energy

- Image formation in mirror
- Reflection
- Speed of light
- Primary and complementary colours
- Colour subtraction

Sound

- Sources and production of sound
- Sound as longitudinal waves and terms related to sound wave
- Characteristics of sound waves
- Reflection of sound
- Sonar

Electricity

- Electricity at home and its sources
- Symbolic representation of electrical components
- Static electricity
- Laws of electrostatic attraction and repulsion
- Methods of charging a conductor
- Electroscope
- Static charges in the atmosphere and lightning conductor

Matter

- Kinetic theory of matter
- States of matter
- Energy in the three states of matter
- Change of state of matter using the kinetic theory

Measurement and experimentation

- Systems of unit and units in SI system
- Measurements using vernier callipers and screw gauge
- Measurement of time and simple pendulum



Motion in one dimension

- Terms related to motion
- Graphical representation of linear motion
- Equations of motion

Laws of motion

- Contact and non-contact forces
- Newton's laws of motion
- Inertia
- Gravitation

Pressure in fluids and atmospheric pressure

- Pressure in fluids and its transmission
- Atmospheric pressure and its measurement

Up thrust in fluids, Archimedes' principle and floatation

- Up thrust and Archimedes' principle
- Relative density and its measurement by Archimedes' principle
- Floatation



CHEMISTRY



Atomic structure

- Contribution of scientists towards the structure of atom
- Electronic configuration of atom
- Fundamental particles of atom
- Radicals
- Position of elements in Periodic table
- Isotopes



Language of chemistry

- Molecular and chemical formulae of compounds
- Valency
- Balancing chemical equation

Elements ,compounds and mixtures

- Latin name and common name of elements with symbols
- Chemical formula of compound
- Valency
- Separation of mixtures

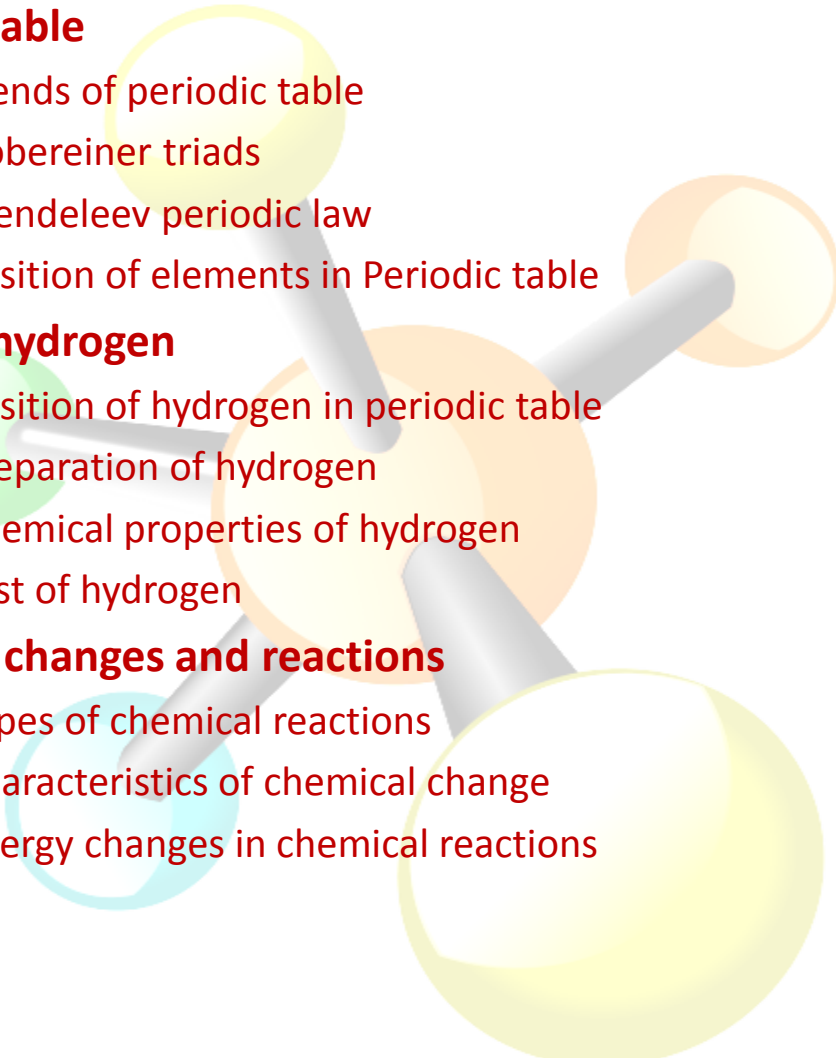
Periodic table

- Trends of periodic table
- Dobereiner triads
- Mendeleev periodic law
- Position of elements in Periodic table

Study of hydrogen

- Position of hydrogen in periodic table
- Preparation of hydrogen
- Chemical properties of hydrogen
- Test of hydrogen

Chemical changes and reactions

- Types of chemical reactions
 - Characteristics of chemical change
 - Energy changes in chemical reactions
- 



BIOLOGY

Health and hygiene

- Diseases (communicable diseases)
- Airborne
- Direct contact
- Insects
- Contaminated food and water)
- Vectors
- Prevention of diseases
- Vaccination
- Immunization
- Addictive substances
- First aid (cuts, burns, stings, animal bites, fractures, heart attack, fainting)

Food production

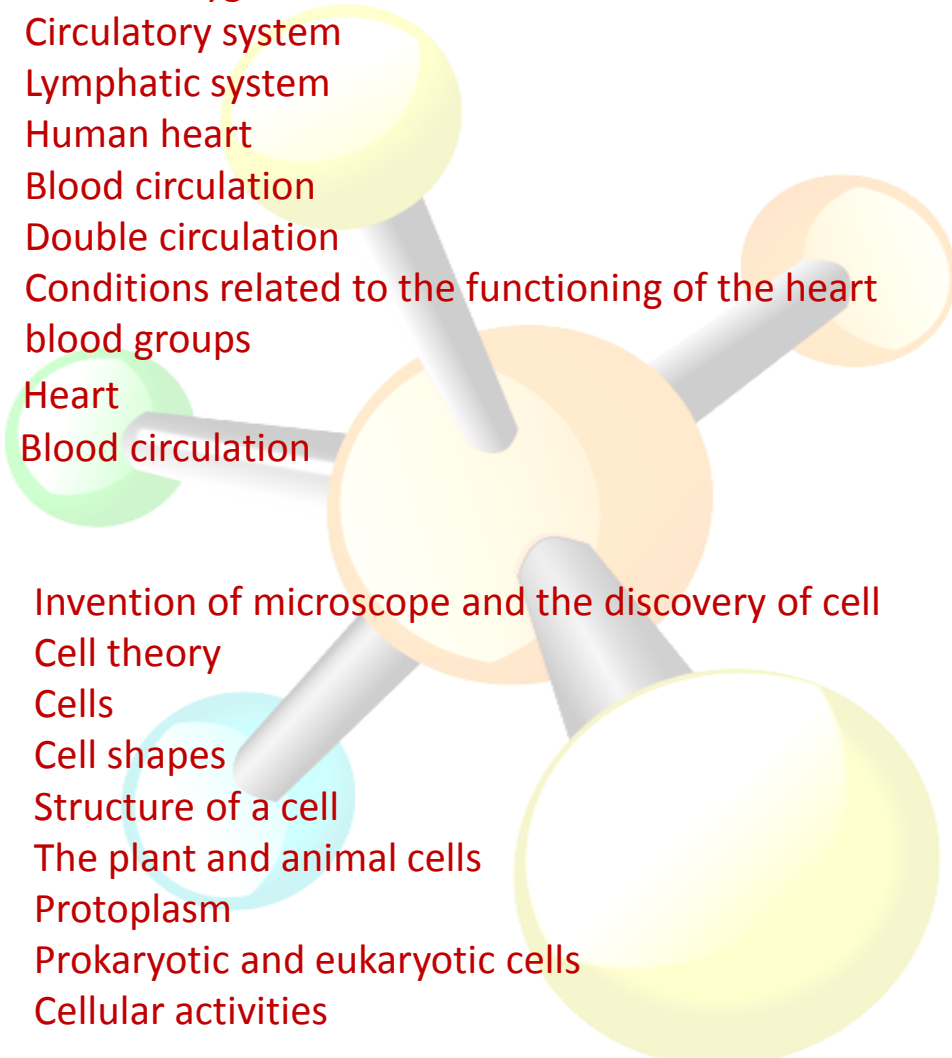
- Microorganisms and food production (bacteria, fungi)
 - Agriculture (kharif crops, rabi crops, food crops, cash crops) horticulture (cutting, layering, grafting, tissue culture),
 - Organic farming
 - Green revolution
 - Animal husbandry (white revolution, poultry farming, sericulture, apiculture, pisciculture, draught animals)
- 

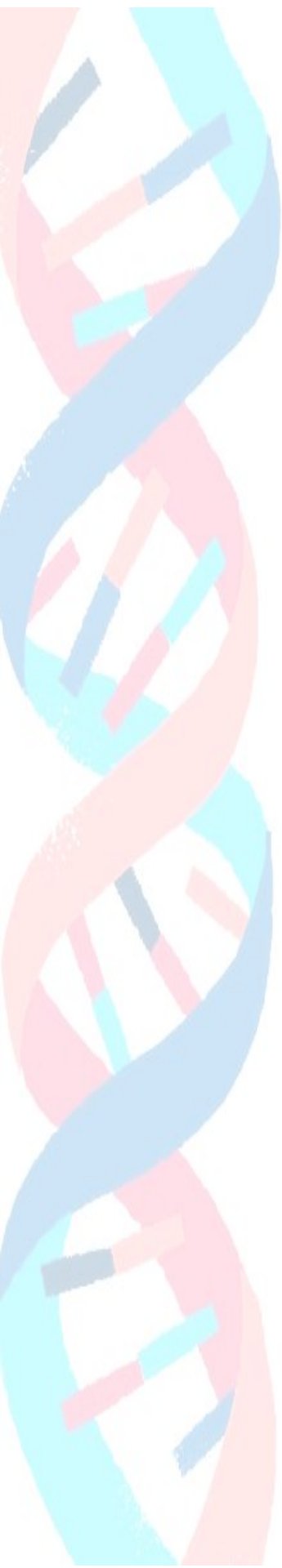


Human body

- Nervous system
- Central nervous system
- Peripheral nervous system
- Important terms – stimulus
- Receptor
- Impulse
- Effector
- Response
- Reflex action and reflex arc
- Endocrine system
- Adolescence
- Stress management
- Personal hygiene
- Circulatory system
- Lymphatic system
- Human heart
- Blood circulation
- Double circulation
- Conditions related to the functioning of the heart
- blood groups
- Heart
- Blood circulation

Cell

- Invention of microscope and the discovery of cell
 - Cell theory
 - Cells
 - Cell shapes
 - Structure of a cell
 - The plant and animal cells
 - Protoplasm
 - Prokaryotic and eukaryotic cells
 - Cellular activities
- 



Tissues

- Tissues
- Plant and animal tissues

The flower

- Structure of a bisexual flower
- General description of the floral parts
- Inflorescences and placentation

Five kingdom classification

- Species
- Categories higher than specie
- Drawbacks of the old two kingdom classification naming an organism
- Major groups of animals
- Invertebrata (porifera to echinodermata) and vertebrata (chordata)

Seeds

- Classification
- Structure
- Germination
- Types of germination
- Some experiments on germination
- Germination in common seeds

