PHYSICAL SCIENCE - SYLLABUS

8th CLASS

1. Force

1.1 What is force ?

1.1.1 Identifying push or pull through different actions

1.2 Types of forces

1.2.1 Contact forces

1.2.1.1 Muscular Force

- Preparing a list of instances where muscular force is used.
- Observing the muscle while working

1.2.1.2 Force of Friction (Frictional force)

- Observing the motion of a ball on different surfaces
- Observing the motion of objects on an inclined plane

1.2.1.3 Normal Force

1.2.1.4 Tension

Lab Activity : To find the limiting force that can be borne by a string

1.2.2 Forces acting at a distance (Field Forces)

1.2.2.1 Magnetic Force

- Observing the magnetic force

1.2.2.2 Electrostatic Force

- Observing electrostatic force

1.2.2.3 Gravitational Force

- Explaining the force acting at a distance : Concept of field
- Visualizing magnetic field

1.3 Net force

- Effects of net force acting on a table
- Effects of stretched rubber bands on fingers

1.3.1 Calculating Net force from Free Body Diagrams (FBD)

1.4 Effect of force on change of the state of motion of an object and its direction

1.4.1 Effects of net force on direction of moving object

1.4.2 Effects of force on the shape of an object

1.5 Pressure

- Change in effect of force with area of contact
- What is pressure ?
- Identifying effects of force

2. Friction

2.1 Force of friction - Types

- Identifying forces acting on a body and the effect of frictional force.

2.1.1 To understand the nature of friction and the concept of staatic friction

- Definitions of friction, sliding friction, static friction
- Observing the variations in frictional force

2.2 Factors affecting friction
2.2.1 Effect of rough surface on frictional force
2.2.2 Effect of area of contact on frictional force
2.2.3 Effect of Normal force on friction
2.3 Is friction necessary ?
2.3.1 Friction produces heat
2.4 Increasing the drecreasing friction
2.4.1 How to reduce friction ?
2.4.2 Effect of rollers on friction
2.4.3 Understanding the princle of ball bearings
2.5 Fluid friction
● Observing fluid friction
2.5.1 Identifying factors influencing the fluid friction

3. Synthetic Fibres and Plastics

3.1 Clothes made from Natural fibres
3.2 What is synthetic fibre ?
3.2.1 Concepts of monomer and polymer
3.3 Identifying synthetic fibres
3.3.1 identifying synthetic fibres by burning test
3.4 Some of the synthetic fibres / examples for synthetic fibres
3.4.1 Nylon
● How is nylon made ?
● How strong is nylon ?
3.4.2 Rayon
● How is rayon prepared ?
● Why are different synthetic fibres mixed ?
3.4.3 Acrylic
3.4.4 Why synthetic fibres ?
3.4.5 Polysters
● How can you say a bottle is PET bottle ?
● Identification of various articles with recycling codes
3.5 Plastics around us
3.5.1 What is a plastic ?
3.5.2 Types of plastics
● Identifying thermoplastic and thermo setting plastic by flame test.
3.5.2.1 Thermoplastics
3.5.2.2 Thermo setting plastics
3.5.3 Why do we prefer plastics ?
3.5.4 Plastics and Environment
3.6 Bio degradable and non-bio degradable substances
3.7 Principle of 4R (Reduce, Recyle, Reuse and Recover)
3.7.1 Reduce
3.7.2 Reuse
3.7.3 Recycle
● Recycling code
● Role of codes in Recycling process
● Uncoded plastics
3.7.4 Recover

4. Metals and Non metals

4.1 Metals and non metals - an introduction

4.2 Physical properties of metals and non metals

4.2.1 Appearance - Lustrous nature

- Observing appearance and colour of materials

4.2.2 Sonarity

- Listening sound produced by some materials

4.2.3 Mallcability

- Identifying mallcability of material

4.2.4 Ductility

4.2.5 Electrical conductivity

- Identifying electrical conductivity of a material

4.2.6 Conductivity of Heat

- Observing conductivity of heat of metals

4.3 Chemical properties of metals and non metals

4.3.1 Reaction with oxygen

- Rusting of metals

4.3.2 Reaction with water

4.3.3 Reaction with acids

4.4 Reactivity of metals

4.5 Some uses of non metals

4.6 Some uses of metals

5. Sound

5.1 Production of sound

- listening sound and predicting source
- identifying different sounds

5.1.1 Vibrating bodies produce sound

- Observing sound produced by a vibrating body

5.2 Sound has energy

5.3 Musical instruments

- producing sounds that resembles sound of rainfall
- observing changes in sound

5.4 Sounds produced by human

5.4.1 Structure of voice box

- Observing movements of vocal cords during speech

5.5 Sound propogation

5.5.1 Sound needs medium to propogate

5.5.2 Propogation of sound in different media

- Observing sound propogation in Solids
- Observing sound propogation in liquids

5.5.3 Is sound propogate without medium

5.6 How do we hear sound

5.6.1 Structure and function of eardrum

5.7 Characteristics of sound

5.7.1 Loudness - Feebleness

- Observing relationship between the intensity of sound produced and vibrations of a body

5.7.2 Pitch

- Identifying pitch or shrillness of a sound

5.8 Normal sound consists of mixed frequencies

5.9 Noice and music

5.10 Audible range

5.11 Sound pollution
- 5.11.1 Effects of sound pollution
- 5.11.2 Controlling measures

6. Reflection of Light at plane surfaces
- 6.1 Formation of image by a Pin hole camera
- 6.2 Fermat principle
- 6.3 Plane mirror
- 6.4 Reflection – its laws
  - 6.4.1 Plane of reflection
- 6.5 Plane mirrors – image formation
  - 6.5.1 Characteristics of an image formed by a plane mirror

7. Coal and Petroleum
- 7.1 Sources of materials
- 7.2 Exhaustible and inexhaustable resources
- 7.3 Fuels - Coal, Petroleum, Natural Gas
  - 7.3.1 Production of petroleum
  - 7.3.2 Natural gas is an important source
  - 7.3.3 Uses of coal, petroleum, natural gas
  - 7.3.4 various uses of petroleum
  - 7.3.5 Coal and its products
    - Coke
    - Coal gas
    - Coaltar
  - 7.3.6 Uses of coal products
    - Observing gases evolved in burning of coal
- 7.4 Some petrochemical products
- 7.5 Natural gas and petrochemicals
- 7.6 Formation of coal, petroleum
- 7.7 Versatile nature of coal and petroleum
- 7.8 Conserving coal and petroleum
- 7.9 Misuse of energy resources
  - 7.9.1 Harmful effects of fuels

8. Combustion, Fuels and flame
- 8.1 Do all materials burn ?
- 8.2 What is required for the process of combustion ?
  - 8.2.1 Testing of necessity of air for burning
  - 8.2.2 Oxygen helps in burning
- 8.3 Ignition temperature
  - 8.3.1 Burning paper with sun rays
  - 8.3.2 Understanding ignition temperature
- 8.4 Types of Combustion
- 8.5 Fuels
- 8.6 Fire controll
- 8.7 Flame
  - 8.7.1 Observing behavour of different solid fuels
  - 8.7.2 Structure of flame
  - 8.7.3 Observing situations, happens in different zones of candle flame

9. Electrical Conductivity of Liquids
- 9.1 Testing the material to know which allows electric current to pass through it.
- 9.2 Electrical conductivity of liquids
  - 9.2.1 Testing the electrical conductivity of liquids
  - 9.2.2 When do liquids conduct electricity - electric conductivity of electrolyte.
- 9.3 Chemical effects of electric current
  - Testing the effect of electric current on potato.

9.4 Electrolytic cell
9.4.1 Making of an electric cell
9.5 Electroplating
9.5.1 Electroplating procedure
9.5.2 Uses of electroplating

10. Some natural phenomena

10.1 Lightning
10.1.1 Sparks - that the greeks know about
10.2 Charging by rubbing
10.2.1 Effects of rubbing
10.2.2 Effects of charged bodies
10.3 Types of charges and their interaction
10.3.1 Finding the presence of charge on a body
10.3.2 Transfer of charge
10.4 Story of Lightning - Safety measures
10.4.1 Lightning conducter
10.5 Earthquakes
10.5.1 Collecting information about earthquake damages
10.5.2 What is earthquake
10.5.3 Causes of earthquake
10.5.4 Earthquakes - safety measures
10.5.5 Earthquakes in Telangana

11. Stars and the Solar system

11.1 Observing changes in length of shadow
11.2 Understanding the North - South movement of Sun
11.3 Sun-dail
11.4 Phases of moon
11.4.1 Why moon shape changed
11.4.2 Moon surface
11.5 Solar eclipse
11.5.1 Types of Solar eclipse
11.6 Lunar eclipse
11.6.1 Types of lunar eclipse
11.7 Know about stars
11.7.1 Observing movements of constellation
11.7.2 Why polar star appears fixed at a point
11.8 The Solar System
11.8.1 Sun
11.8.2 The Planets
11.8.3 Some other members of Solar system
- Asteroids
- Comets
- Meteors and Meteorites

11.9 Artificial Satellites
11.10 How people know earth is spherical
11.10.1 How people know earth rotates on its own axis

12. Graphs of Motion

12.1 Motion, Graphs - Introduction
12.2 Graph is not a map
12.3 Graphs of uniform motion
12.3.1 Slope of Graph - Velocity
12.3.2 Graphs of Stationary Objects
12.4 Graphs of non-uniform motion