1. ALTERNATE SOURCES OF ENERGY

1. Introduction
2. Know about the need for alternative sources of energy
3. Learn the various sources of non conventional energy
4. Realize the vast potential of harnessing solar energy
5. Know other sources of renewable energy

2. ENVIRONMENTAL ISSUES

1. Introduction
2. Define pollution
3. Distinguish different types of pollutants
4. Learn about the sources of air, water and land pollution
5. Know about the effects of pollutants
6. Understand global environmental problems
7. Understand the consequences of noise and radioactive pollution

3. PERIODIC CLASSIFICATION OF ELEMENTS

1. Introduction
2. State Dobereiner's law of triads
3. State Newland's law of octaves
4. State Mendeleev's periodic law
5. Give reason to state that Mendeleev's periodic law is an improvement over Newland's law
6. State Moseley's modern periodic law
7. State the advantage of using atomic number instead of atomic mass in the statement of periodic law
8. Explain the main features of modern periodic table
    a) groups
    b) periods
    c) 's' 'p' 'd' 'f' blocks
    d) transitional elements
    e) periodic trends in atomic radius, ionization energy, electrochemical nature, metallic nature
9. Predict valency and valence electrons when group number is given
10. Predict period number and the block when atomic number of an element is given

11. Identify the relationship between electronic configuration and formation of periods in the periodic table
12. State the reasons for giving a separate place for 'f' block elements
13. State the advantages of periodic table
14. Appreciate the gradual improvement in the development of periodic table and discuss the possibilities of further improvement

4. SILICON

1. Introduction
2. Realise the presence of compounds of silicon in building materials, ornamental stones
3. Explain the sophistication in the extracting of silicon
4. Describe the extraction of amorphous and crystalline silicon
5. Differentiate between amorphous and crystalline silicon
6. List of uses of silicon and silicon compounds

5. GREEN PLANTS AND CHORDATES

1. Introduction
2. Understand the differences between nonvascular and vascular plants
3. Learn the characteristics of red algae, brown algae and green algae
4. Recognise the characteristics of bryophytes and pteridophytes
5. Differentiate between gymnosperms and angiosperms
6. Understand the diversity among vertebrates

6. PLANT AND ANIMAL TISSUES

1. Introduction
2. Define the term tissues
3. Classify plant tissues
4. Learn about the types and functions of meristematic tissues
5. Learn about the simple and complex permanent tissues
6. Classify animal tissues
7. Understand the types, location and function of epithelial, muscular and connective tissues
8. Understand the structure of a neuron

7. MICROBIAL DISEASES

1. Introduction
2. Know about the diseases caused by microbes
3. Analyse the causes, symptoms and preventive measures for chickungunya, birdflu and dengue
4. Understand the meaning and types of sexually transmitted infections
5. Analyse the causes symptoms and preventive measures in respect of syphilis, gonorrhea, genital herpes genital warts, hepatitis-B and AIDS

8. TYPES OF MOTION

1. Introduction
2. Identify linear motion and circular motion
3. Give examples for wave motion
4. Recall the fact that waves carry energy but there is no transfer of matter
5. Differentiate between a mechanical wave and an electromagnetic wave
6. Solve numerical problems on wave motion of the wave
7. Identify simple harmonic motion in day to day life
8. Explain simple harmonic motion with examples

9. HEAT ENGINES

1. Introduction
2. Define the meaning of heat engines
3. Distinguish between a steam engine and an internal combustion engines
4. Draw the diagram of a steam engine
5. State the limitations of a steam engine
6. Explain the working of a petrol engine
7. Draw the diagram of a petrol engine
8. Explain the functioning of a diesel engine
9. Mention the applications of heat engines
10. Calculate the efficiency of heat engines

10. NUCLEAR ENERGY

1. Introduction
2. Recall the phenomenon of radio activity
3. Recall that radioactivity is a nuclear change
4. Distinguish between nuclear reactions and chemical reactions
5. Explain the meaning of nuclear energy
6. Give example for nuclear fission reaction
7. Explain the chain reaction of nuclear fission
8. Draw the diagram of nuclear power reactor
9. Explain nuclear fusion with an example
10. Relate the energy of nuclear fusion reaction to the origin of energy of sun and stars
11. Distinguish between nuclear fission and nuclear fusion
12. Write the equations of nuclear reactions
13. State the precautions to be taken in handling and disposal of nuclear energy fuels
14. Appreciate the progress made by India in harnessing nuclear energy

11. INDUSTRIAL INORGANIC CHEMISTRY

(A) GLASS

1. Introduction
2. List the unique properties of glass which make it a popular substance
3. List the major advantages of glass articles when compared with other metallic containers
4. Recall the raw materials which are used in the manufacturing of glass
5. Describe the steps of manufacturing of glass
6. List the types of glasses
7. List the uses of different types of glasses

(B) CERAMICS

1. Introduction
2. List the raw materials which are used in the manufacture of ceramics
3. Describe the steps of ceramic manufacture
4. List the uses of ceramics

(C) PAPER

1. Introduction
2. Recall the raw materials which are used in paper making process
3. Describe the steps involved in paper making process
4. Realise the significance of the economy in the use of paper
5. Know the benefits of recycling paper
6. List the uses of paper

12. CARBON AND ITS COMPOUNDS

(A) CARBON

1. Introduction
2. Recognize the compounds containing carbon used in your daily life
3. Classify the given set of compounds containing carbon and compounds which do not contain carbon
4. Recall the allotropes of carbon
5. Define catenation
6. Write the electronic configuration of excited state carbon atoms
7. Arrange carbon atoms in straight chain, branched chain and ring structure
8. Identify and illustrate the characteristics of carbon that make it unusual
9. Make a list of several reasons why carbon (organic) chemistry deserves a chapter of its own
10. Recognize the nature f chemical bond in many carbon compounds
11. Define organic chemistry
12. Define isomerism

(B) HYDROCARBONS

1. Introduction
2. Give example for fossil fuel containing hydrocarbons
3. Classify the given set of hydrocarbons into aliphatic and aromatic hydrocarbons
4. Classify the given set of aliphatic compound into alkanes, alkenes and alkynes
5. Distinguish between saturated and unsaturated hydrocarbons
6. Represent arrangement of carbon atoms in straight chain, branched chain and ring structure
7. Give examples for aromatic hydrocarbons
8. Use IUPAC system to name the hydrocarbons

9. Draw the structures of given hydrocarbons
10. Name the substitution products of methane
11. Write the molecular formulae of aliphatic hydrocarbons using the general formulae
12. Know the uses of aromatic hydrocarbons
13. Define functional group
14. Define poly functional group
15. Define homologous series
16. You are able to differentiate between alkanes, alkenes and alkynes

(C) FUNCTIONAL GROUPS

1. Introduction
2. IUPAC nomenclature of class of organic compounds

(D) HYDROGENATION OF OILS

1. Introduction
2. How fats are different from oils
3. Saponification value of an oil or fat

13. INDUSTRIAL ORGANIC CHEMISTRY

(SUCROSE AND ETHYL ALCOHOL)

1. Introduction
2. Distinguish between sugar and jaggery
3. Recall the molecular formula of sucrose
4. Give reasons for charring of sugar and starch when immersed in concentrated sulphuric acid
5. Classify the carbohydrates into polysaccharides, disaccharides and monosaccharides.
6. Name the byproducts of sugar industry
7. Explain the steps of manufacturing sugar from sugar cane
8. Mention the uses of byproducts of sugar industry
9. Recognise the necessity of preparing sugar instead of jaggery from sugar cane
10. State the molecular formula of ethyl alcohol
11. Name the raw material used to manufacture ethyl alcohol
12. Define fermentation
13. Cite examples for fermentation in daily life

14. Explain the steps of manufacturing ethyl alcohol from molasses
15. Name the enzymes which convert sugar into alcohol
16. Recognize the role of ethyl alcohol as a renewable motor fuel
17. Give reasons for adding water and yeast to molasses during the manufacture of ethyl alcohol
18. Distinguish between ethanol and methanol

14. SOUND

1. Introduction
2. Enlist the properties of sound
3. Conduct experiments to verify that the sound affects matter
4. State the condition for the echo to be heard
5. Make a list of the uses of echo
6. Solve problems related to echo
7. Explain the uses of ultrasonic waves
8. Identify Doppler Effect in day to day life
9. Explain the working of SONAR
10. Define Doppler Effect
11. Make a list of the uses of Doppler Effect
12. Identify the use of RADAR

15.METALS

1. Introduction
2. Distinguish between a metal and a non metal
3. Recall the chemical properties of metals
4. Write the equations of chemical reactions of metals
5. Define ore
6. Recall the metallic ores that occur in Karnataka
7. Explain the different methods of concentrating ores
8. Explain the steps of the method of extracting iron from hematite
9. Draw the diagram of blast furnace used in the extraction of iron
10. Explain the steps of extracting aluminium from bauxite
11. Draw the diagram of electrolytic cell used in the extraction of aluminium
12. Explain the different methods of refining a metal
13. Recognize the alloys used in our daily life recall the constituents of different alloys
14. Make a list of the advantage of alloy over pure metals

15. State the special properties of alloys
16. Make a list of the contribution of Indians in the development of good quality alloys.

16.ELECTRO MAGNETIC INDUCTION

1. Introduction
2. Recall the experiment of magnetic effect of electric current
3. Give examples for sources of electricity
4. State the advantage of electricity as a source of energy over the other sources such as fossil fuels
5. State Faraday's laws of electromagnetic induction
6. State the factors on which of A.C and D.C dynamos
7. Explain the working of A.C and D.C dynamos
8. Draw neat diagrams of A.C. and D.C. dynamos
9. Distinguish between A.C and D.C
10. Explain the working of D.C motor
11. State the principle of induction coil and transformers
12. Draw a neat diagram of D.C motor
13. State Fleming's right hand rule and left hand rule
14. Recognize the importance of transformers
15. Appreciate the contribution of Faraday to mankind
16. Prepare models of dynamo and motor
17. Develop skill to use toy D.C motor to prepare model of a D.C dynamo

17.ELECTRONICS

1. Introduction
2. Know the difference between between conductors, Insulators and semiconductors
3. Know how the conductivity varies with temperature in conductors and semiconductors
4. Differentiate between types of semiconductors n-type, p-type
5. Explain junction diode, forward biasing and reverse biasing
6. Mention uses of diodes
7. Distinguish between types of transistors npn and pnp
8. Mention uses of transistors

18.BEHAVIOUR OF GASES

1. Introduction
2. Learn the important properties
3. Understand Charles Law which explains behavior of gases at constant pressure
4. Make a list of the application of Charles Law
5. Understand Boyles Law which explains behavior of gases at constant temperature
6. Make a list of the application of Boyles Law
7. Understand diffusion in Gases

19. PLANT AND ANIMAL BREEDING

1. Introduction
2. Know about various plant breeding techniques
3. Identify various hybridization techniques employed in plant breeding
4. Understand and appreciate the role of biotechnology in plant and animal breeding
5. Realize the need for the application of biotechnology in food industry
6. Analyse the relative merits and demerits of developing genetically modified plants and animals

20.CONTROL AND COORDINATION IN PLANTS AND ANIMALS

1. Introduction
2. Know the process of chemical coordination in plants
3. Understand plant hormones, their characteristics and functions
4. Analyse chemical coordination in man
5. Know the importance of hormones
6. Understand the structure and functions of endocrine glands
7. Analyse hormonal disorders and their symptoms
8. Understand the importance and functioning of nervous system in man
9. Know the importance and functions of sense organs

21.HEREDITY

1. Introduction
2. Know the meaning of genetics, heredity and variation
3. Analyse Mendel's hybridization experiments using pea plants
4. Understand principle and laws of heredity
5. Get to know the deviations from Mendelian inheritance
6. Appreciate the contribution of biotechnology in modern life
7. Explain the contribution of DNA fingerprinting technology in the identification of criminals
8. Develop the sense of preserving the balance in nature

22.IONIC CONDUCTION

1. Introduction
2. Define the meaning of electrolytic conductors
3. Distinguish between metallic conductors and electrolytic conductors
4. Identify types of electrolytes
5. Distinguish between different types of electrolytes
6. State the meaning of Non electrolytes
7. State the Faraday's Laws of electrolysis
8. Make a list of the applications of electrolysis and its importance

23.THE STORY OF HUMANS

1. Introduction
2. Identify the relationship between humans and other primates
3. Analyse the stages of human evolution
4. Appreciate the biological changes which have occurred in human evolution
5. Understand the characteristics of each stage
6. Differentiate the human races

24.SPACE SCIENCE

1. Describe the protostar stage of a star
2. State the conditions for a star to attain the steady state
3. Give the reasons for the enormous output of energy during steady state of a star
4. Explain the process of a star to change from steady state to red giant state
5. State what the supernova is
6. Name the types of galaxies
7. State the experimental evidence for proposing Big Bang Theory