

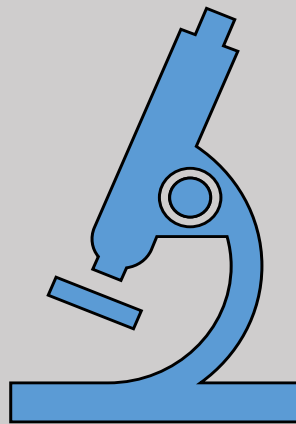
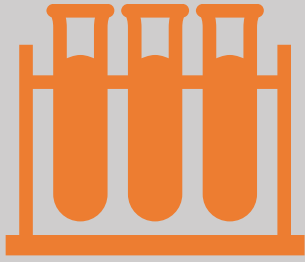
This book is prepared to endure application side of the NCERT textbook.
This book contains:- Assignments, Modules for all the lesson and Model question paper.

Activity Book

Class :- 10

Shaik Malik , Resource Person
ph no 8971420157

“Experience the thunder.....”



PHYSICS MODULES

Module 10 P (01 & 02) : Electricity and Its effects

Contents :

1. Potential and Potential difference.
2. Electric field and Conductors and Insulators.
3. Electric current and Ohm's Law.

Learning Objective:

The students must be able to draw electric circuits using different circuit components.

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### **Module 10 P (03) : Electricity and Its effects**

#### **Contents :**

1. Resistance and Resistivity. They must be able to understand ohm's Law and its limitations.
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1. Module 10 P (04 & 05) : Electricity and Its effects
2. Factors affecting Resistance and Resistivity.

#### **Learning Objective:**

#### **Contents :**

1. Combination of resistances in series and parallel.
2. Heating Effect of current and its applications.
3. Electric Power.

#### **Learning Objective:**

The students must be able to understand the series and parallel combination and they must be able to solve different numerical problems.

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Module 10 P (06) : Magnetic Effects of Current

Contents :

1. Magnetic field and its sources.
2. Electromagnets and its uses
3. Force on a current carrying conductor: Fleming's Left hand Rule.

Learning Objective:

The students must be able to understand the concept of magnetic field lines. They must be able to find the direction of force experienced by a current carrying conductor placed inside an external magnetic field using Fleming's Left hand Rule.

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**Module 10 P (07 & 08 ) : Magnetic Effects of Current**

**Contents :**

1. Electromagnetic induction and magnetic flux.
2. Induced emf and Induced current.
3. AC and DC: comparison.
4. Domestic Electric circuit.

**Learning Objective:**

To understand the magnetic flux and to link the concept with Faradays Law of Electro-magnetic induction. Also to understand the basic differences between AC and DC and the functioning of Domestic electrical circuits.

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Module 10 P (09) : Natural Resources

Contents :

1. Different forms of Energy.
2. Renewable versus non-renewable sources.
3. Fossil fuels.
4. Solar energy.
5. Water and Tidal Energy.
6. Nuclear Energy.

Learning Objective:

The students must be able to understand the utilities of different sources of energies, and they must understand the relative merits and demerits of different sources of energies.

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**Module 10 P (10)**

***Revision for SA - I***

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Module 10 P (11 & 12) : Energy

Chapter: Reflection of Light

Contents :

1. Nature of Light
2. Laws of Reflection
3. Reflection from plane and curved surfaces
4. Magnification by mirrors and mirror formula
5. Applications of mirrors

Learning Objective:

The students should understand the method used to draw ray diagrams and they must be able to solve different numerical problems based on mirror formula.

Module 10 P (13 & 14) : Refraction of Light

Contents :

1. Refraction of light & laws of Refraction.
2. Refraction through a glass slab and Refractive index.
3. Lenses: Its types and uses.
4. Formation of images by lenses.
5. Lens formula and sign conventions.
6. Power of lenses.

Learning Objective:

The students must be able to understand the formation of images by lenses and they must be able to apply the knowledge of lens formula and sign convention to solve different numerical problems.



Module 10 P (15 & 16) : Human Eye and Colourful World.

Contents :

1. The Human Eye.
2. Defects of vision of Eyes and its rectification. (Myopia, Hypermetropia, Presbyopia, Astigmatism)

Learning Objective:

The students should understand the method used for the functioning of eye and the rectification of defects of vision.



Module 10 P (17) : Human Eye and Colourful World.

Contents :

1. Dispersion of white light by a prism.
2. Atmospheric refraction and its applications.

Learning Objective:

The students must be able to understand the splitting of light into its constituent colours and the concept of atmospheric refraction.



Module 10 P (18) *Revision for SA - II*



ASSIGNMENTS

Module : 10P (01, 02 & 03) :

Section : A

- Q.1. Two charged batteries A and B are at potential – 30 and + 20 V respectively and they are connected by a connecting wire. The current
- (i) Will flow from A to B (ii) Will flow from B to A
(iii) Will not flow at all
- Q.2. The work done in moving a positive charge across two points in an electric circuit is a measure of
- (i) Current (ii) Potential difference
(iii) Resistance (iv) Power
- Q.3. 1 coulomb = _____ electrons
- (i) 1.6×10^{-19} (ii) 9.1×10^{-31}
(iii) 6.25×10^{-18} (iv) None of these
- Q.4. The unit of specific resistance is
- (i) Ohm metre (ii) Ohm
(iii) Volt (iv) Ampere
- Q.5. Most metals are good conductors of electricity because they have
- (i) Large number of molecules
(ii) Large number of free electrons
(iii) A shiny surface
(iv) A low temperature
- Q.6. A wire is cut into half. Its resistivity
- (i) Also becomes half
(ii) Becomes double
(iii) Remains same
(iv) Depends upon thickness of the wire
- Q.7. 1 volt of potential difference is equal to
- (i) 1 coulomb per joule (ii) 1 joule
(iii) 1 joule per coulomb (iv) 1 ampere
- Q.8. In a resistance box the resistances are connected in
- (i) Series (ii) Parallel
(iii) Neither of two (iv) Both (i) and (ii)
- Q.9. For ohmic resistors, the graph between V and I is

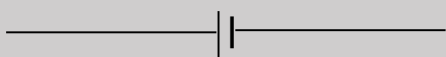



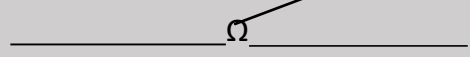
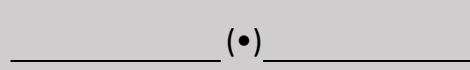

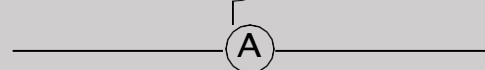
- | | |
|----------------|--------------------|
| (i) Parabolic | (ii) Hyperbolic |
| (iii) Circular | (iv) Straight line |

Q.10. A rheostat is used

- (i) To bring a known change of the resistance in the circuit to alter the current
- (ii) To continuously change the resistance in any arbitrary manner and there by alter the current.
- (iii) To make or break the circuit at any instant.
- (iv) Neither to alter the current nor the resistance.

Section : B

Q.1. What do these symbols denote

- (i) 
- (ii) 
- (iii) 
- (iv) 
- (v) 
- (vi) 
- (vii) 
- (viii) 

Q.2. State the conditions on which resistance of a conductor depends.

Q.3. State the condition under which electric charge can flow through a conductor.

Q.4. A wire of resistance $4R$ is bent in the form of a circle. What is the effective resistance between the ends of diameter?

Q.5. Is ohm's law a universal law? If not give example.

Q.6. Will an electron in an electric field move towards higher potential or lower potential?

Q.7. What is meant by the statements :

- (i) Potential at a point is 1 Volt
- (ii) The potential difference between the points is 1 Volt

Q.8. How will you maintain a potential difference between the ends of a conductor?

Section : C

Q.1. A large number of free electrons are present in metals. Why is there no current in the absence of electric field across it?

Q.2. The following set of results was obtained

V (Volt)	2	4	6	8	10
I (Amp)	0.74	1.50	2.22	2.96	3.70

- (i) Plot a graph of potential difference on the Y-axis against current on the X-axis
- (ii) Explain the graph
- (iii) Use the graph to obtain a value for the resistance of the conductor.

Q.3. State the formula correlating the current flowing in a conductor and the voltage applied across it. Also show this relationship by drawing a diagram. What would be resistance of a conductor if the current flowing through it is 0.35 ampere when the potential difference across it is 1.4 volt?

Q.4. Give reasons for the following:

- (i) The resistance of a thicker wire of copper is much less than that of a thinner wire of copper of the same length.
- (ii) For the same thickness of wires used we need a smaller length of a wire, made of an alloy, rather than a pure metal, for getting a resistance coil of a given value.
- (iii) Electric lamp filaments are made from tungsten.

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Module 10P (04 & 05)

Section : A

Q.1. SI unit of electric energy is

- (i) Kwh
- (ii) Joules
- (iii) J sec
- (iv) NC^{-1}

Q.2. Filament of electric bulb is made up of

- (i) Copper
- (ii) Silver
- (iii) Tin
- (iv) Tungsten

Q.3. Electric heaters are made from wire of

- (i) Copper
- (ii) Nichrome
- (iii) Constantan
- (iv) Manganin

Q.4. A 20 ohm and a 40 ohm resistors are connected in series. The ratio of the power used by the 40 ohm resistor to that used by the 20 ohm resistor is

- (i) 1
- (ii) 2
- (iii) 1/2
- (iv) 4

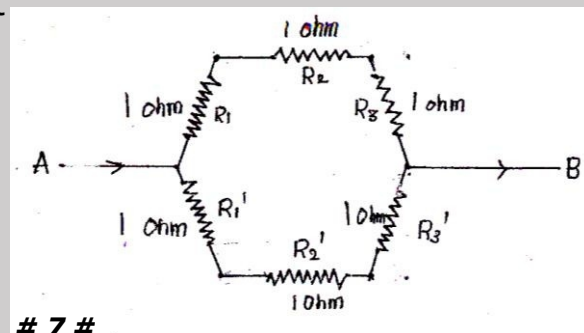
- Q.5. The work done in moving electric charges across an electric resistor appears as
- (i) Heat (ii) Light
 (iii) Heat and light (iv) None of these
- Q.6. 10 A current passes for 10 seconds through wires of diameter 5 cm and 10 cm respectively
- (i) More heat is produced in thick wire
 (ii) More heat is produced in thin wire
 (iii) Same heat is produced in both wires
 (iv) No heat is produced in the thin wire.
- Q.7. Which is not the unit of energy?
- (i) Ohm (ii) Kilo calories
 (iii) Joules (iv) Erg
- Q.8. If 10 resistances each equal to 2 ohm are connected in parallel, their resultant would be,
- (i) 5 ohm (ii) 0.2 ohm
 (iii) 20 ohm (iv) 12 ohm

Section : B

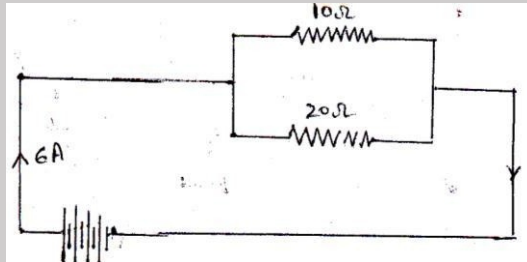
- Q.1. How can 2 ohm, 3 ohm and 6 ohm be connected to give an effective resistance of 4 ohm?
- Q.2. What type of combinations should be used for
- (i) Increasing (ii) Decreasing the resistance
- Q.3. A one metre long wire is bent at 180° in the middle and two halves one twisted together. What will be the effect on resistance?
- Q.4. Why large amount of heat is produced in the heating coil on passing current through it?
- Q.5. What is the meaning of mark 100W, 220V on an electric bulb?

Section : C

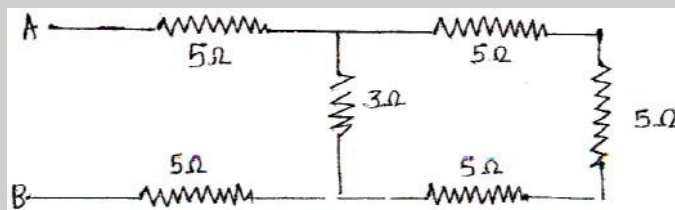
- Q.1. Six 1 ohm resistance are connected to form a regular hexagon as shown in the figure. Calculate the resistance offered by the combination if the current enters at a point A and leaves from the point



- Q.2. 6×10^{17} electrons cross per minute through an area. What is the electric current?
- Q.3. Two resistances of 19 ohm and 20 ohm are connected in parallel. A battery provides 6A of current to the combination as shown in the figure. Calculate the current in each resistor?



- Q.4. Calculate the resistance between A and B of the circuit shown



- Q.5. Three resistances of 2 Ohm, 3 Ohm, and 6 Ohm are connected
 (i) In series (ii) In parallel

Calculate the ratio of the effective resistance of series and parallel combination of resistances.

- Q.6. An electric kettle rated at 220V, 2.2 kW works for 3 hrs. Find the energy consumed and the current drawn.
- Q.7. If an electric bulb has a rating 200W-220V and if it is used for 5 hrs. daily for 10 days, calculate the cost of using the bulbs at 40 paise per unit.
- Q.8. An electric iron of resistance 660 Ohms is connected to a main supply of 220 V. Compute the current through the element and the amount of heat produced in Joules in 11 minutes.

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H.O.T.S. Questions

Very Short Answer Type Question

[1 mark]

- Q.1. Alloys are used in electrical heating devices rather than pure metals. Give one reason.
- Q.2. The electrical resistivity of a materials is given below in ohm-metre. Which of these materials can be used for making the element of a heating device?
- | | |
|-----------------------------|----------------------------|
| (i) 6.84×10^{-8} | (iv) 2.50×10^{12} |
| (ii) 1.60×10^{-8} | (v) 4.40×10^{-5} |
| (iii) 1.00×10^{-4} | (vi) 2.30×10^{17} |

Short Answer Type Questions

[2 marks]

- Q.1. Will current flow more easily through a thick wire or a thin wire of the same material when connected to the same source? Why?
- Q.2. A wire of uniform area of cross-section is stretched to four times its original length. By what factor does its resistivity change?
- Q.3. Nichrome and copper wires of same length and same radius are connected in series. Current „I“ is passed through them. Why does the nichrome wire get heated first?
- Q.4. If a wire of resistivity (ρ) is stretched to thrice its initial length. What will be its new resistivity?
- Q.5. A wire of resistance 20Ω is bent in the form of a closed circle. What is the effective resistance between the two points at the ends of any diameter of the circle?
- Q.6. Name a substance whose resistance decreases with temperature.
- Q.7. Why is less heat generated in long electric cables than in filaments of electric bulbs?
- Q.8. State which has a higher resistance: a 50 W or a 25 W lamp bulb and how many times?
- Q.9. Why is an ammeter likely to be burnt out if you connect it in parallel?

Short Answer Type Questions

[3 marks]

- Q.1. V-I graph for a metallic wire at two different temperatures T_1 and T_2 are as shown in the given figure (a). Which of the two temperatures is higher and why?

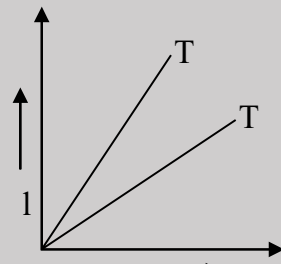


Fig. a

- Q.2. Two students perform the experiments on series and parallel combinations of two given resistors R_1 and R_2 and plot the following V-I graphs (a) and (b).

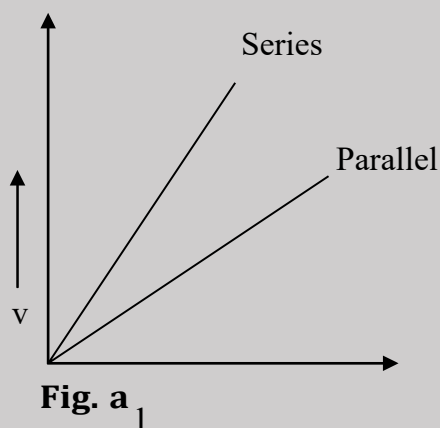


Fig. a₁

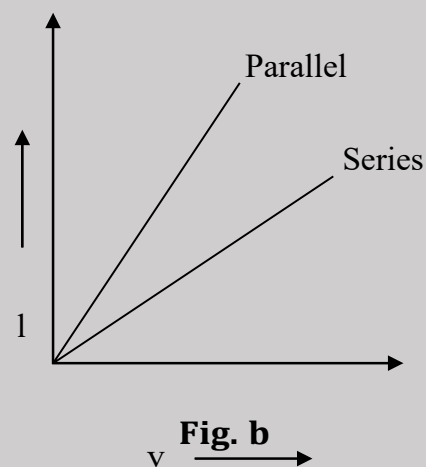


Fig. b

- Q.3. Which of the graphs is (are) correctly labelled in terms of the words „series“ and „parallel“? Justify your answer. Under what conditions is Ohm's law applicable?

- Q.4. Two wires are of the same material but of the different lengths and areas of cross-section. Will their resistance be same or different?
- Q.5. Can you produce high voltage in your body without getting a shock?

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**Value Based Question**

- Q.1. If you are asked to think of electricity, many favorable and unfavorable images come to your mind.
- (i) Name the favourable images.
- (ii) What are the unfavourable images?
- (iii) What is common to all these images?

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Module 10P (06)

Section: A

- Q.1. The region around a magnet in which force of attraction and repulsion can be detected is called
- (i) Electric Field (ii) Magnetic Field
 (iii) Electromagnetic Induction (iv) None
- Q.2. Between two like poles of magnet, there is
- (i) Attraction (ii) Attraction as well as Repulsion
 (iii) Repulsion (iv) None
- Q.3. The direction of magnetic field produced by a current carrying conductor can be found using
- (i) Right hand thumb rule (ii) Right hand Fleming"s rule
 (iii) Left hand Fleming"s rule (iv) Right hand Screw rule
- Q.4. If a region has crowded magnetic lines of force it means that the field is
- (i) Weaker (ii) May be weaker or stronger
 (iii) Stronger (iv) None
- Q.5. Magnetic field around a current carrying wire has
- (i) Circular symmetry (ii) No symmetry
 (iii) Elliptical curves (iv) Parallel magnetic field
- Q.6. Magnetic field due to current carrying wire depends upon
- (i) Current only (ii) Distance from the wire only
 (iii) (i) and (ii) both (iv) None

Q.7. For making an electromagnet, core of which material will you prefer.

- (i) Soft iron
- (ii) Hard steel
- (iii) Carbon steel
- (iv) chromium steel

Q.8. For making permanent steel, core of which material will you prefer.

- (i) Carbon steel
- (ii) Chromium steel
- (iii) Alnico
- (iv) All of these

Section: B

Q.1. What are the factors on which magnetic field due to a solenoid depends?

Q.2. Draw a sketch to show the magnetic lines of force due to

- (i) A straight current carrying conductor
- (ii) A circular coil
- (iii) A solenoid

Q.3. State various uses of electromagnets.

Q.4. State various uses of permanent magnets.

Q.5. What is meant by the term "magnetic field lines"? List two properties of magnetic field lines.

Q.6. You are provided with a bar magnet, card board and iron filings.

- (i) Suggest an activity to show the pattern of magnetic field lines.
- (ii) Draw a rough sketch of the field lines which you will observe.

Q.7. Differentiate between an electromagnet and a permanent magnet. Mention the factors on which the strength of an electromagnet depends.

Q.8. How can you show that the magnetic field produced by a given electric current in the wire decreases as the distance from the wire decreases?

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Module 10P (07 & 08)

Section: A

Q.1. Magnetic lines of force inside current – carrying solenoid are

- (i) Parallel inside the solenoid and circular at the ends.
- (ii) Circular but intersect each other.
- (iii) Along the axis and are parallel to each other.
- (iv) Perpendicular to axis and equidistant from each other

- Q.2 A charge is stationary at a place, its magnetic field will.
- (i) Be parallel to charge
 - (ii) Perpendicular to charge
 - (iii) Be zero since no magnetic field is produced around stationary charge.
 - (iv) None of these
- Q.3 Fuse wire used in 15A circuit is _____ than used in 5A circuit
- (i) Thicker
 - (ii) Thinner
 - (iii) Same
 - (iv) Not related
- Q.4 In domestic wiring
- (i) The live wire goes through the switch
 - (ii) The earth wire goes through the switch
 - (iii) No wire goes through the switch
- Q.5 In our home, electric appliances are connected in
- (i) Series
 - (ii) Parallel
 - (iii) Partly in series and partly in parallel
 - (iv) None
- Q.6 AC is used because
- (i) It is cheap
 - (ii) It is easily reproducible
 - (iii) It is economical in transmission
 - (iv) It is not dangerous
- Q.7 The rotation of a coil in the magnetic field is found in
- (i) A dynamo only
 - (ii) A motor only
 - (iii) Both dynamo and motor
 - (iv) Neither dynamo nor motor
- Q.8 An electric generator actually acts as
- (i) A source of electric charge
 - (ii) A source of heat energy
 - (iii) An electromagnet
 - (iv) A converter of energy

Section : B

- Q.1. What is an overload in an electric circuit?
- Q.2. If a magnetic field is normal to a current carrying conductor, how will you find the direction of the force acting on the conductor?
- Q.3. Why is electricity transmitted over long distances at very high voltage?
- Q.4. What is the difference between a heating wire and a fuse wire?
- Q.5. A bird sitting on 11,000V wire is not hurt while a person touching 220 V wire dies. Why?
- Q.6. Why are electrical appliances used in a domestic circuit connected in parallel? Give two reasons.

- Q.7. What is a short circuit? How does a fuse help in case of a short circuit?
- Q.8. What is the effect of force on a current carrying conductor placed in a magnetic field. When is the effect minimum and maximum?

Section : C

- Q.1. Define electromagnetic induction. State the factors on which the strength of induced current depends.
- Q.2. Describe the hazards and safety measures in the use of electricity in our houses.
- Q.3. Why is it necessary to connect an earth wire to electric appliances having metallic covers?
- Q.4. State „Fleming“s left hand rule“ with a labelled diagram. Find the direction of force experienced by a conductor carrying a current in eastward direction inside magnetic field directed northward.
- Q.5. What is the difference between direct and alternating currents? Write one important advantage of using alternating current.

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H.O.T.S. Questions

Very Short Answer Type Questions

[1 mark]

- Q.1. When a proton moves freely in a magnetic field, which of its properties can change?
- Q.2. What will happen when a current-carrying conductor is placed in a \perp magnetic field lines inside a magnet?
- Q.3. An alternating electric current has a frequency of 50 Hz. How many times does it change its direction in one second?
- Q.4. Why is soft-iron not used for making a permanent magnet?
- Q.5. A magnetic field deflects a positively charged α -particle travelling along west towards north. What is the direction of the magnetic field?
- Q.6. Why is the magnetic field produced by a solenoid much stronger than the magnetic field of a straight current carrying wire?

Short Answer Type Questions

[2 marks]

- Q.1. A coil of insulated copper wire is connected to a galvanometer. What will happen if a bar magnet is (i) pushed into the coil (ii) held stationary inside the coil?
- Q.2. A student performs an experiment to study the magnetic effect of current around a straight current-carrying conductor. He reports that

- (i) The direction of deflection of the north pole of a compass needle kept at a given point near the conductor remains unaffected even when the terminals of the battery sending current in the wire are interchanged.
- (ii) For a given battery, the degree of deflection of a N-pole decreases when the compass is kept at a point farther away from the conductor.

Which of the above observations of the students is incorrect and why?

Q.3. You are given the following current-time graphs (a) and (b) from two different sources:

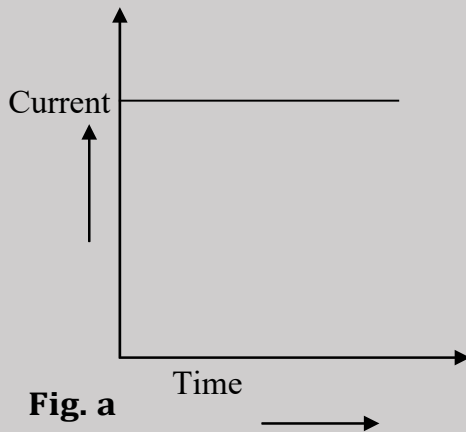


Fig. a

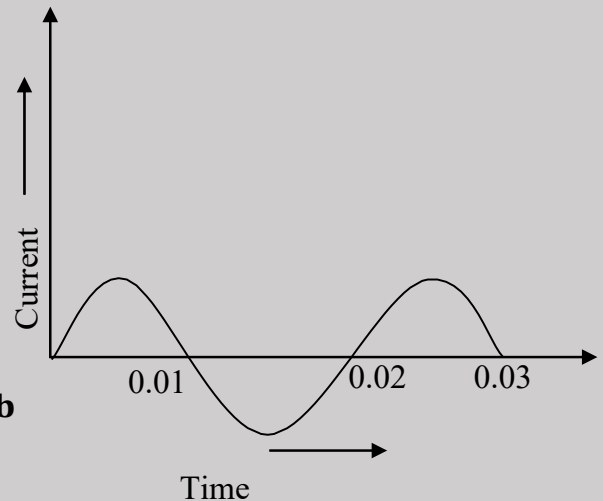


Fig. b

- (i) Name the type of current in two cases.
- (ii) Identify any one source for each type of these currents.
- (iii) What is the frequency of the current in case (ii) in India?

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**Value Based Question**

Q.1. The use of magnetic therapy for pain relief has become increasingly popular in the last few years. Traditional physician are very skeptical of the benefits of magnetic therapy because of the lack of valid scientific evidence to support its use.

- (i) What is the theory behind magnetic therapy?
- (ii) Is there any side effect if one goes for this therapy?
- (iii) Do we need to take any precaution in case we wish to undergo magnetic therapy?

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Module 10P (09)

Section: A

Q.1. Solar cell is a small wafer of semiconductor devices as

- (i) Fe-Ni
- (ii) Na - Fe
- (iii) Ge-Si
- (iv) Si-Na

- Q.2. Infra red rays are
- (i) Harmful to skin
 - (ii) Bright red in colour
 - (iii) Having more energy than ultraviolet rays
 - (iv) Having less energy than ultraviolet rays.
- Q.3. Solar energy can be directly converted to electrical energy by
- (i) Solar furnace
 - (ii) Solar cell
 - (iii) Solar heater
 - (iv) Solar cooker
- Q.4. To obtain high temperature in Solar heating devices, we use
- (i) Concave reflectors
 - (ii) Plane mirror
 - (iii) Lenses
 - (iv) None of these
- Q.5. The component of visible light which has shortest wavelength is
- (i) Red
 - (ii) Violet
 - (iii) Blue
 - (iv) Green
- Q.6. Radiation emitted by sun that are not visible to Human Eye and gives feeling of hotness is
- (i) Ultraviolet
 - (ii) Infrared
 - (iii) Gamma rays
 - (iv) X rays.
- Q.7. Which energy is freely available in ample amount
- (i) Solar
 - (ii) Hydel
 - (iii) Geothermal
 - (iv) Wind
- Q.8. To work properly, wind electric generators need wind speeds of atleast about:
- (i) 1.5 km/h
 - (ii) 15 km/h
 - (iii) 150 km/h
 - (iv) 1500 km/h
- Q.9. Biogas is formed in
- (i) Presence of air
 - (ii) Absence of air
 - (iii) Presence of water
 - (iv) Both (ii) & (iii)
- Q.10. The Uranium used in nuclear reactors contains
- (i) 142 neutrons
 - (ii) 146 neutrons
 - (iii) 143 neutrons
 - (iv) 92 neutrons

Section : B

- Q.1. What are renewable and non renewable sources of energy? Give an example.
- Q.2. What are fossil fuels? Give three examples of fossil fuels.
- Q.3. (i) What is hydroelectricity? Explain the basic principle of generation of hydroelectricity.
(ii) State two advantages and two disadvantages of producing hydroelectricity.
- Q.4. (i) Draw a neat and labeled diagram of a solar cooker.
(ii) Mention the use of following in the working of a solar cooker.
(a) Glass sheet
(b) Plane mirror
(c) Black Painted vessels
- Q.5. What is a solar cell? Give 2 examples and two uses of solar cell.
- Q.6. What are the limitations of solar heating devices?
- Q.7. A solar cell transforms energy of one form to another. What are these forms?
- Q.8. Explain how wind energy can be used to generate electricity. Also mention two advantages and two limitations of using wind energy for generating electricity.
- Q.9. What is biogas? Name the major component of biogas.
- Q.10. Describe the construction and working of a biogas plant with the help of a labeled diagram.
- Q.11. Define nuclear fission and nuclear fusion with an example.

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H.O.T.S. Questions

Very Short Answer Type Question

[1 mark]

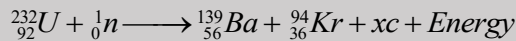
- Q.1. What kind of mirror – concave, convex or plane-would be suited for use in a solar cooker? Why?
- Q.2. Name two types of energy which do not relate to the sun.
- Q.3. Biomass is a renewable source of energy. Why?

Short Answer Type Question

[2 marks]

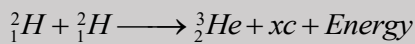
- Q.1. Why is CNG considered an environmental friendly fuel? State two reasons for it?
- Q.2. Mention any two ways by which water can be used to produce hydro-electricity?
- Q.3. In many application, solar cells are connected to rechargeable batteries. Why is it so?
- Q.4. "The calorific value of cooking gas is 50KJ/g." What does it mean?

Q.5. A nuclear reaction is represented by the following equation:



- (i) Name the process represented by this equation.
- (ii) Identify the particle c and the number x .
- (iii) Name one installation where the above reaction is utilized.
- (iv) What type of bomb is based on similar type of reaction?

Q.6. A nuclear reaction is represented by the following equation:



- (i) Name the process represented by this equation.
- (ii) Identify the particle c and the number x .
- (iii) State two conditions under which such a reaction takes place.
- (iv) What type of bomb is based on similar type of reaction?

~~~~~  
**Value Based Question**

- Q.1. There are many dangers in the use of nuclear power plants. There have been a number of situations in which these dangers have become real disasters, giving birth to safety and regulatory agencies.
- (i) Name three main dangers of nuclear power plants.
  - (ii) How should the nuclear nations conduct themselves to avert these dangers?

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**Module 10P (10)** Revision for SA – I

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**Module 10P (11 & 12)**

**Section – A**

- Q.1. A real and diminished image of an object can be obtained by,
- (i) Plane Mirror
  - (ii) Concave Mirror
  - (iii) Convex Mirror
  - (iv) Both Concave & Convex Mirrors
- Q.2. The relation between  $f$  and  $R$  in case of a concave mirror is,
- (i)  $f = 2R$
  - (ii)  $f = \frac{2}{R}$
  - (iii)  $f = \frac{R}{2}$
  - (iv)  $f = \frac{1}{R}$
- Q.3. Image formed by reflection from a convex mirror is,
- (i) Real only
  - (ii) Virtual only
  - (iii) Both real & virtual
  - (iv) Neither real nor virtual
- Q.4. Which of the following letter doesn't show lateral inversion,
- (i) N
  - (ii) Q
  - (iii) P
  - (iv) O

- Q.5. Linear magnification of a plane mirror is,
- |                          |                                          |
|--------------------------|------------------------------------------|
| (i) Always positive      | (ii) Always negative                     |
| (iii) Both +ive and -ive | (iv) Depends upon position of the object |
- Q.6. Mirror formula is applicable to,
- |                                       |                                  |
|---------------------------------------|----------------------------------|
| (i) Plane mirrors only                | (ii) Spherical mirror only       |
| (iii) Both plane and spherical mirror | (iv) Neither plane nor spherical |
- Q.7. Magnification of mirror is  $+\frac{2}{3}$ . The type of mirror is,
- |              |                         |
|--------------|-------------------------|
| (i) Concave  | (ii) Plane              |
| (iii) Convex | (iv) Combination of all |
- Q.8. When an object placed in front of a convex mirror is moved away from it, the image –
- |                                 |                                |
|---------------------------------|--------------------------------|
| (i) Also moves away from focus  | (ii) Moves closer to focus     |
| (iii) Becomes larger and larger | (iv) Becomes real and inverted |
- Q.9. Plane mirror is a part of sphere of radius
- |                                           |                                        |
|-------------------------------------------|----------------------------------------|
| (i) Zero                                  | (ii) Infinity                          |
| (iii) Nil, since its not a part of sphere | (iv) Any value depending upon its size |
- Q.10. A ray of light traveling parallel to the principal axis after reflection from a convex mirror,
- |                                                        |
|--------------------------------------------------------|
| (i) Always passes through its focus                    |
| (ii) Always passes through its centre of curvature     |
| (iii) Appears to come from its focus behind the mirror |
| (iv) Retraces its path                                 |

### **Section – B**

- Q.1. Why a ray of light passing through the centre of curvature of a concave mirror retrace its path after reflection?
- Q.2. One wants to see an enlarged image of an object in a mirror. What kind of mirror should one use and where should the object be placed?
- Q.3. Which property of a concave mirror can be used to determine its focal length?
- Q.4. What kind of mirror is used in vehicles to see the traffic following it?
- Q.5. A man standing in front of a special mirror finds his image having a very small head, a fat body and legs of normal size. What are the shapes of the three parts of the mirror?
- Q.6. What type of mirror is formed when a mercury drop falls on the earth?

### Section – C

- Q.1. Distinguish between real and virtual image.
- Q.2. Draw ray diagrams to show the formation of images when the object is placed in front of a concave mirror.
- (i) Between its pole and focus point.
- (ii) Between its centre of curvature and focus point.
- Q.3. How will you distinguish between a plane mirror, a concave mirror and a convex mirror without touching them?
- Q.4. Define :
- (i) Radius of curvature.
- (ii) Principal focus
- Q.5. Show that image distance is same as object distance when an extended object is placed in front of the plane mirror.

### Section – D

- Q.1. A short linear object of 2 cm. lies on the axis of a concave mirror of 15 cm. focal length at a distance of 30 cm. from the mirror. What is the size of the image?
- Q.2. The image behind a convex mirror ( $R = 68$  cm) is located at 22 cm. from the mirror. Where is the object located? What is the magnification produced? Write the nature of image formed.
- Q.3. Find the position, nature and size of the image of an object 4 cm high placed at a distance 10 cm from a concave mirror of focal length 20 cm.
- Q.4. Show that the mirror formula for spherical mirror also holds good for a plane mirror too.
- Q.5. An object is placed at 10 cm from focus farther away from the mirror. If the image formed is half the size of the object and real in nature, find the focal length of the mirror.
- Q.6. An image double the size of the object is formed on placing an object in front of a mirror of focal length 20 cm. Find the position (s) of the object.

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### H.O.T.S. Questions

#### **Very Short Answer Type Question**

**[1 mark]**

- Q.1. Which colour of the light reflected by an object will make it appear blue?
- Q.2. What are the values of (i) the angle of incidence and (ii) the angle of reflection for the normal incidence on a plane mirror surface?

- Q.3. A concave mirror is placed in water. Will there be any change in focal length?
- Q.4. A person wants to see the full image of tall building in a small mirror. Which type of mirror should be used by him?
- Q.5. What type of image is formed on a cinema screen?
- Q.6. To use a concave mirror as a dentist's mirror, what should be the position of the teeth?
- Q.7. If a plane mirror is rotated by an angle  $\theta$ , by how will the angle between the incident and the reflected ray change?

**Short Answer Type Question**

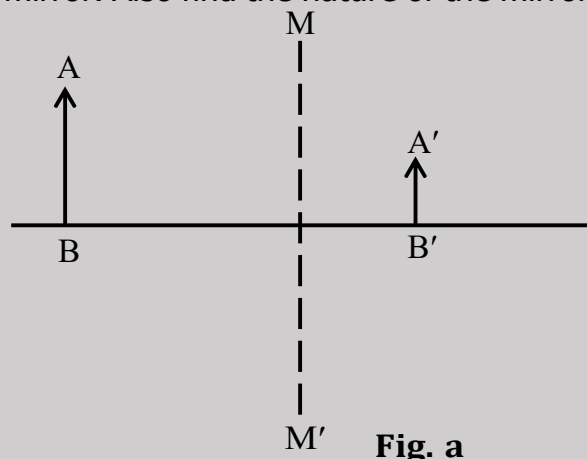
**[2 marks]**

- Q.1. Name the kind of mirror used to obtain. (i) a real and enlarged image (ii) virtual and enlarged image.
- Q.2. Name the kind of mirror used to obtain. (i) virtual and diminished image (ii) real and diminished image.
- Q.3. What happens to the speed of light when it undergoes reflection? Why?

**Short Answer Type Question**

**[3 marks]**

- Q.1. In the figure (a), AB is the object, A' B' is its image and MM' is the position of the mirror. Complete the ray diagram and find the position of centre of curvature and focus of the mirror. Also find the nature of the mirror



## Module 10P (13 & 14)

### Section : A

- Q.1. A ray of light travelling in air falls obliquely on the surface of a calm pond. It will
- (i) Go into the water without deviating from its path.
  - (ii) Deviate away from the normal.
  - (iii) Deviate towards the normal.
  - (iv) Turn back on its original path.
- Q.2. A thin lens and a spherical mirror have a focal length of + 15 cm each.
- (i) Both are convex.
  - (ii) The lens is convex and the mirror is concave.
  - (iii) The lens is concave and the mirror is convex.
  - (iv) Both are concave.
- Q.3. A convex lens forms a virtual image when an object is placed at a distance of 18 cm from it. The focal length will be
- (i) Greater than 36 cm
  - (ii) Greater than 18 cm
  - (iii) Less than 36 cm
  - (iv) Less than 18 cm
- Q.4. An object is placed before a convex lens. The image formed.
- (i) Is always real
  - (ii) May be real or virtual
  - (iii) Less than virtual
  - (iv) Is always erect
- Q.5. An object is placed before a concave lens. The image formed
- (i) Is always erect
  - (ii) May be erect or inverted
  - (iii) Is always inverted
  - (iv) Is always real
- Q.6. A lens has a power of + 0.5 D. It is
- (i) A concave lens of focal length 5 m
  - (ii) A convex lens of focal length 5 cm
  - (iii) A convex lens of focal length 2 m
  - (iv) A concave lens of focal length 2 m

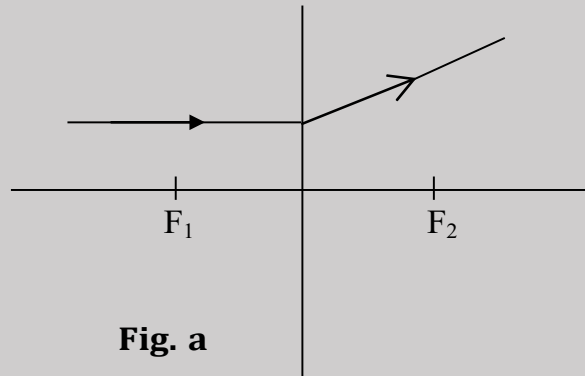
### Section : B

- Q.1. Focal length of a convex lens is same as radius of curvature of a concave mirror. If the mirror converges the light parallel to the principal axis at a distance of 10 cm from the pole where does the same light beam converge by the lens?
- Q.2. Show by ray diagram the formation of images by a convex lens in any two cases.
- Q.3. A bird flies down vertically towards a water surface. To a fish inside the water, vertically below the bird, how will the bird appears to be?
- Q.4. A lens forms a real image of an object when placed at 20 cm from the lens. Find

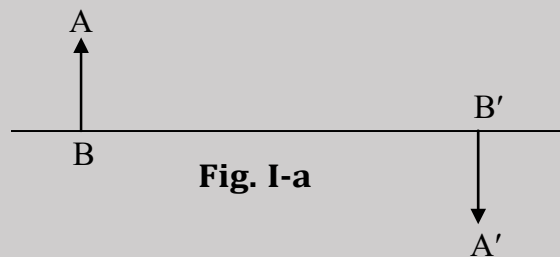




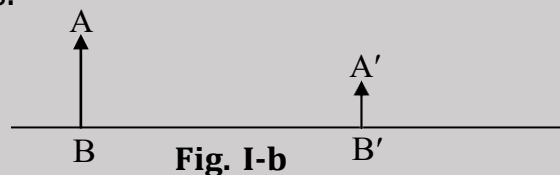
- Q.1. When a bird looks at a fish in water does it appear raised or deeper than it actually is? When a fish looks at the bird does it appear nearer or further away?
- Q.2. Copy the figure (a) and complete the formation of the image. What is the type of lens used in the figure? What is the type of the image formed?



- Q.3. Complete the following ray diagram in Figure (I-a) in which AB is the object and A'B' is the image. Locate the lens and mark the focus of the lens by the letter F. What type of lens is this?



- Q.4. In Figure (I-b), state the position of object, position of image, nature of image when (i) convex lens is used as burning glass (ii) convex lens is used in observing biological specimens.



- Q.5. Which lens assist in reading a book? Which lens assist in reading from a blackboard in a class?
- Q.6. Can one burn a piece of paper by just using a convex lens instead of a matchstick or any direct flame? Support your answer with the help of an appropriate ray diagram.
- Q.7. What happens to the speed of light when it undergoes refraction? Explain why?

**Short Answer Type Question**

**[3 marks]**

Q.1. In case of refraction of light through a rectangular glass slab, explain why (i) the emergent ray is parallel to the direction of the incident ray (ii) the emergent ray is shifted sideward slightly?



**Value Based Question**

Q.1. A spherical mirror in which reflecting surface is towards the centre of the sphere of which the mirror is a part, is called concave mirror. The rays of light incident on concave mirror in a direction parallel to principal axis, actually meet at a single point „F“ on the principal axis of the mirror. This point is called principal focus of the mirror.

Read the above passage and answer the following question:

- (i) Is principal focus of a concave mirror, a real point or a virtual point?
- (ii) What happens in case of a convex mirror?
- (iii) Our teachers and parents advise us to stay focused. What does it imply?



**Module 10P (15, 16 & 17)**

**Section : A**

Q.1. The least distance of distinct vision for normal eye is

- (i) Infinity
- (ii) 25 m
- (iii) 25 cm
- (iv) 25 m

Q.2. The change in the focal length of eye lens is brought by.

- (i) ciliary muscles
- (ii) pupil
- (iii) optical nerves
- (iv) cornea

Q.3. Persistence of vision of eye is

- (i) 1/10 sec.
- (ii) 1/16 sec.
- (iii) 1/100 sec.
- (iv) cornea

Q.4. Electric pulses from retina to brain is conveyed via

- (i) ciliary muscles
- (ii) blind spot
- (iii) pupil
- (iv) optical nerves

Q.5. Part of eye which is removed from eyes of dead body for eye donation is

- (i) cornea
- (ii) Retina
- (iii) Iris
- (iv) Pupil

Q.6. Accomodation of normal eye is from

- (i) 5 cm to 15 cm                      (ii) 1m to 3m  
(iii) 15 cm to 1 m                      (iv) 25 cm to infinity

Q.7. The splitting of white light into different colours on passing through a prism is called

- (i) Refraction                              (ii) Reflection  
(iii) Dispersion                              (iv) Deviation

Q.8. Night vision device utilizes

- (i) Infra – red rays                      (ii) Ultra-violet rays  
(iii) X - rays                              (iv)  $\gamma$  – rays

Q.9. When white light falls on the glass prism, the least deviated colour is

- (i) violet                                      (ii) orange  
(iii) green                                      (iv) red

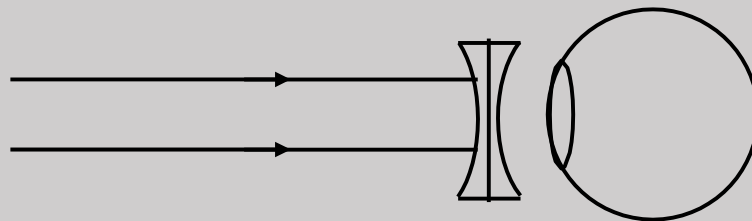
Q.10. Which one of the following colour has maximum frequency

- (i) Red                                          (ii) Violet  
(iii) Green                                      (iv) Yellow

**Section : B**

Q.1. The far point of a shortsighted person is 1.5 m. Find the focal length, Power and nature of the remedial lens.

Q.2. Complete the following figure.



Q.3. Why do different colours deviate differently in a glass prism?

Q.4. What is colour blindness?

Q.5. What are Rods and Cones? State briefly the functions of Rod & Cones.

Q.6. What is the reason behind twinkling of stars? Explain.

### Section : C

- Q.1. Draw a labeled diagram of the human eye and give the basic details about its various parts.
- Q.2. What is myopia? Draw ray diagrams showing the formation of image of an object at infinity and at its far point by a myopic eye. Explain how this defect is corrected by using a concave lens.
- Q.3. What is hypermetropia? Draw ray diagrams showing the formation of image by a hypermetropic eye. For (i) a nearby object (ii) an object at the near point of the eye. How is this defect corrected by using a convex lens?
- Q.4. Why is the colour of the clear sky blue?

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**Module 10P (18)**

Revision for Annual Examinations

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**H.O.T.S. Questions**

**Very Short Answer Type Questions**

**[1 mark]**

- Q.1. How does the focal length of the eye lens change?
- Q.2. Name the defect of vision due to
- (i) Power of the eye is too great
  - (ii) Focal length of the eye lens is too great.
- Q.3. Which colour light is produced due to the scattering of sunlight by (i) very small-sized (ii) very large-sized constituent particles of the atmosphere?
- Q.4. Which property of the eye is used by cinematography to show motion pictures?
- Q.5. Why the signal lights are red in colour?
- Q.6. What happens to the image distance in the eye when we increase the distance of an object from the eye?

**Short Answer Type Question**

**[2 marks]**

- Q.1. Why do clouds look white?
- Q.2. Why is a normal eye not able to see clearly the objects closer than 25 cm?
- Q.3. What is the relation between the wavelength of light and the size of the particles causing scattering?
- Q.4. When and where do we see a rainbow?

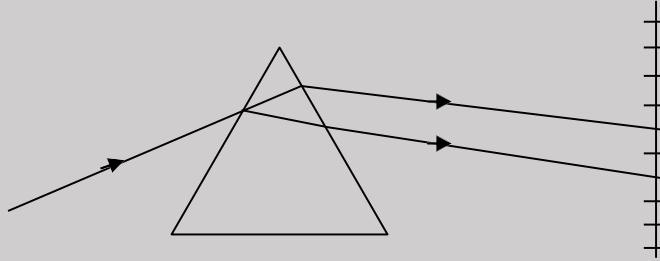
Q.5. A person is able to see objects clearly only when objects are lying at distances between 50 cm and 300 cm from his eye.

- (i) What kind of defect of vision is he suffering from?
- (ii) What kind of lenses will be required to increase his range of vision from 25 cm to infinity? Explain briefly.

**Short Answer Type Questions**

**[3 marks]**

Q.1. The alongside figure (a) shows a beam of white light falling on a glass prism gets split up into seven colours marked 1 to 7, as shown in the diagram.



A student makes the following statement about the spectrum observed on the screen.

(i) The colours at position marked 3 and 5 are similar to the colour of the sky and the core of a hard boiled egg respectively. Is the above statement made by the student correct or incorrect? Justify in which two positions correspond closely to the colour of –

- (a) A solution of potassium permagnate.
- (b) „danger“ or „stop“ signal lights.

Q.2. A student finds the writing on the blackboard as blurred and unclear when sitting on the last desk in the classroom. He, however sees it clearly when sitting on the front desk at an approximate distance of 2 m from the blackboard. Draw ray diagrams to illustrate the formation of image of the blackboard writing by his eye lens when he is seated at the (i) last desk (ii) front desk. Name the kind of lens that would help him to see clearly even he is seated at the last desk. Draw a ray diagram to illustrate how this lens help him to see clearly?



**Value Based Question**

Q.1. Dolly and Ritu are two friends studying together in VI grade. They prefer to sit together. Dolly is uncomfortable reading the blackboard when they are sitting on the last bench. Dolly is depressed fearing that she may turn blind one day. Ritu explains to her that the problem may be due to some minor eye defect. Dolly

accompanied by Ritu visits the Doctor who prescribed specs of suitable power for her. Dolly is now all smiles and thanks Ritu.

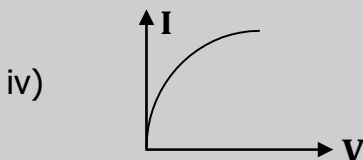
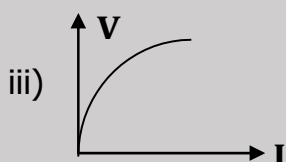
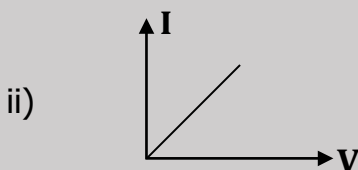
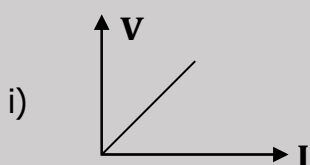
Read the above passage and answer the following questions.

- (i) Name the eye defect Dolly is suffering from.
  - (ii) What could be the cause of this defect?
  - (iii) The far point of Dolly is 50cm. What is the power of the lens she should use to read from the black board?
  - (iv) What values are displayed by Ritu?
- ~~~~~

## **REVISION WORKSHEET**

### **(Light, Electricity and Experiments on Light and Electricity.)**

- Q.1. Which of the following correctly describe OHM's law?
- i)  $V \propto I$                                   ii)  $I \propto 1/R$   
iii)  $V \propto R$                                   iv) None of the above.
- Q.2. What are the two quantities between which you have to draw a graph to study ohm's law?
- i)  $V$  and  $I$                                   ii)  $I$  and  $R$   
ii)  $V$  and  $R$                                   iv) Potential difference and current.
- Q.3. In the experiment of ohm's law which apparatus /device did you use to change the voltage?
- i) Voltmeter                                  ii) Variable Resistance box  
iii) Rheostat                                  iv) Ammeter.
- Q.4. For a particular conducting wire what remains constant
- i)  $V$                                                   ii)  $I$   
iii)  $R$                                                   iv) All the above.
- Q.5. Which of the following correctly represents ohm's law experiment?



- Q.6. On what factors does resistance of a conductor depend.
- i) length of conductor.                  ii) Area of cross-section.  
iii) All the above.
- Q.7. Which of the following equation is/are correct?
- i)  $R = \rho l/A$                                   ii)  $\rho = R l/A$   
iii)  $R = \rho A/l$                                   iv)  $\rho = \sqrt{R A/l}$

Q.8. I have two wires of same substance, A and B,

The length of A is twice the length of B

The area of A is twice the area of B.

Which of the following is /are correct?

- i) Resistance of A is twice that of B.
- ii) Resistance of A is four times that of B.
- iii) Both the resistance of A&B are same.
- iv) None of the above.

Q.9. The unit (s) of Resistivity is/are:

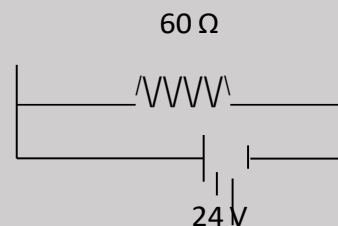
- i)  $1/\Omega^{-1} \text{ m}^{-1}$
- ii) Volt meter ampere<sup>-1</sup>
- iii)  $\Omega \text{ m}$
- iv) All the above

Q.10. Which of the following is correct?

- i)  $R \propto I$
- ii)  $R \propto 1/A$
- iii)  $R \propto T$
- iv)  $R \propto A$

Q.11. What is the current in the following Resistance in the given diagram?

- i) 2.5 A
- ii) 0.4 A
- iii) 1440 A
- iv) None of above



Q.12. A piece of wire is redrawn by pulling it until its length is doubled, but volume of material remains constant. If the original Resistance was 10 Ω. What is the new resistance?

- i) 100 Ω
- ii) 20 Ω
- iii) 5 Ω
- iv) 40 Ω

Q.13. When light rays converge or diverge while passing through a lens, which law is followed

- i) Reflection
- ii) Diffraction
- iii) Refraction
- iv) Dispersion

Q.14. What does snell's law represent?

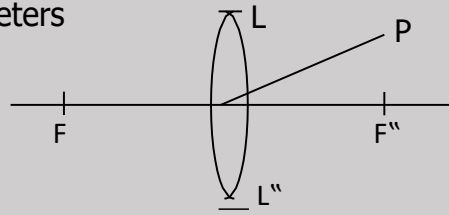
- i)  $\angle i = \angle r$
- ii)  $\angle i / \angle r = \text{constant}$
- iii)  $\sin r / \sin I = \text{constant}$
- iv)  $\sin I / \sin r = \text{constant}$

Q.15. Which of the following represents refractive index of glass-air interface?

- i)  ${}^{\text{air}}n_{\text{glass}}$
- ii)  ${}^{\text{glass}}n_{\text{air}}$
- iii)  ${}^{\text{air}}\mu_{\text{glass}}$
- iv)  ${}^{\text{glass}}\mu_{\text{air}}$

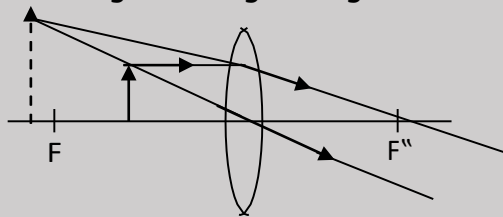


Q.16. In the following figure what are the parameters



- i) P = aperture, LL'' = focal plane, F = focus.
- ii) LL'' = aperture, P = optical center, PF = focal length.
- iii) LL'' = aperture, F = focus, PF = focal length
- iv) PF = focal length, P = optical center, FF'' principal axis.

Q.17. Give the nature of the image in the given figure.



- i) Real, Erect, Enlarged.
- ii) Virtual, Erect, Diminished
- iii) Virtual, Erect, Enlarged
- iv) Real, inverted, Enlarged.

Q.18. If you wish to use a convex lens as a projector then where should you keep the object so as to get a projected image

- i) At focus F
- ii) Between F & 2F
- iii) At 2F
- iv) Between F & O

Q.19. Which of the following is /are correct for a convex lens?

- i) The image formed is always real.
- ii) The image is always inverted.
- iii) It can be used to correct short sightedness.
- iv) None of above.

Q.20. Which of the following is/are correct?

- i)  $1/f = 1/v - 1/u$
- ii)  $f = v - u$
- iii)  $M = v/u$
- iv)  $M = h_2 / h_1$

Q.21. Where should an object be placed, so that a real and inverted image of the same size is obtained by a convex lens?

- i) At the focus
- ii) At twice the focal length
- iii) At infinity
- iv) Between optical center of lens & focus

Q.22. An object is placed at a distance of 50 cm from a concave lens of focal length 20cm. What is the nature of the image?

- i) Real, inverted      ii) Virtual, erect
- iii) Real, erect      iv) Virtual, inverted

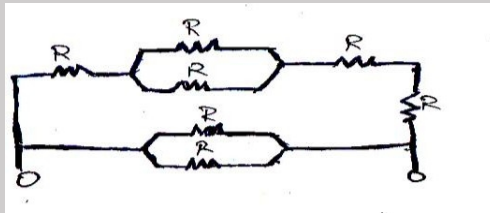
Q.23. Suppose you have three resistances of  $10\ \Omega$  each. You need a final resistance of  $5\ \Omega$ . How can you do so?

Q.24. You want to change the resistance of a wire without changing its material, length or area of cross-section. Then what should you do?

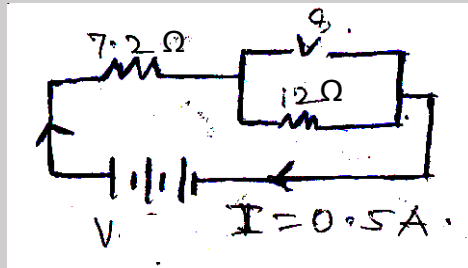
Q.25. Why do electricians wear rubber gloves or shoes while working with electricity?

Q.26. Give the final resistance of the given figure.

$R = 1\ \Omega$



Q.27. In the given figure what is the potential difference of the battery?



Q.28 Which of the following is true?

- i) Current distribution is equal in all resistances of a parallel circuit.
- ii) Potential difference across the two terminals of a parallel circuit remains same for all resistances.
- iii) Both the above.
- iv) None of the above.

Q.29. In the discovery of superconductivity by H.K Ones. Which metal was used?

- i) Iron      ii) Copper
- iii) Silver      iv) Mercury
- v) Gallium

Q.30 A copper wire has diameter of  $0.5\ \text{mm}$  and resistivity of  $1.6 \times 10^{-6}\ \text{Ohm-m}$ . How much wire is required to make a  $10\ \Omega$  coil.

Q.31. We know that white light is made up of VIBGYOR colours. But when we combine all the VIBGYOR colours using sketch pens etc, we get black colour. Why?

Q.32. When can you have Total Internal Reflection

- i) Light passing from glass to air  $\angle i = 90^\circ$
- ii) Light passing from air to glass  $\angle i = 90^\circ$
- iii) Light passing from glass to air  $\angle r = 90^\circ$
- iv) Light passing from air to glass  $\angle r = 90^\circ$

Q.33. If I have two lenses of powers  $P_1 = -3D$  and  $P_2 = +5D$ . What should be the power of a third lens so that the combination acts like a plane piece of glass?

Q.34. My spectacles have a lens of power  $-5.0D$ . What kind of lens do I have? What is my eyes suffering from?

- i) Convex, Myopia.                      ii) Concave, Hypermetropia.
- iii) Convex, Hypermetropia.        iv) Concave, Myopia.

Q.35. Lateral displacement through a glass slab increases with

- i) thickness of medium.                      ii) angle of incidence.
- iii) increase of refractive index.        iv) all the above.

Q.36. Light of wavelength 500 nm in air, enters a glass plate of  $\mu = 1.5$ . What is the speed, wavelength and frequency of light in the glass. Assume frequency to be constant in both media.

Q.37. What is common among Infra Red, Ultraviolet and Visible light?

- i) They all have same velocity.
- ii) They all are electromagnetic in nature.
- iii) They all have same wavelength.
- iv) They all have same frequency.

Q.38. The working of an optical fibre is due to

- i) Refraction.                                      ii) Reflection
- iii) Total Internal Reflection        iv) None of the above.

Q.39. How does current flow through a metal?

- i) Due to flow of electrons.
- ii) Due to flow of negative ions.
- iii) Due to flow of protons.
- iv) Due to flow of positive ions.

Q.40. Which of the following is /are not correct?

- i)  $V = IR$                                       ii)  $P = I^2R$
- iii)  $P = V^2/R$                                 iv)  $W = Irt$

Q.41. 1 kilowatt hour is equal to

- i)  $3.6 \times 10^6$  Joules /second      ii)  $3.6 \times 10^6$  Joules
- iii)  $3.6 \times 10^6$  watt                      iv)  $3.6 \times 10^6$  watt second

- Q.42. A current of 4 A flows through a 12 V car headlight for 10 minutes. How much energy transfer takes place?
- Q.43. Two lamps, one rated 100W, 220 V and the other is 60 W, 220 V are connected in parallel to 220-V supply. What current is drawn from supply?
- Q.44. When a particle carrying a charge of  $10^{-5}$  coulomb is brought from infinity to a point P,  $2 \times 10^3$  Joules of work is done. What is the potential at the point P?
- Q.45. Which of the following gives relation between Power and Focal length?
- i)  $P = F^2$                                               ii)  $P = F$
  - iii)  $P = 1/F$                                         iv)  $P = 1/F^2$
- Q.46. An object 4 cm high is placed at a distance of 27 cm in front of a convex lens of focal length 18 cm. Find the position and nature of the image formed.
- Q.47. Why do diamonds sparkle?
- Q.48. Why do stars twinkle?
- Q.49. Five dry cells each of 1.5 V have internal resistance of 0.2, 0.3, 0.4, 0.5 and  $12\Omega$ . When connected in series, what current will the five cells furnish through  $10\Omega$  resistance?
- Q.50 In q. no. 49 if the cells are connected in parallel a long with the  $10\Omega$  resistance, then what will be the current?

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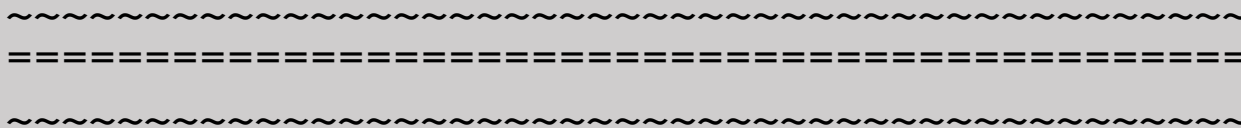
SYLLABUS (CHEMISTRY)

TERM – I

- Chapter 1 - Chemical Reactions and Equations
- Chapter 2 - Acids, Bases, Salts
- Chapter 3 - Metals and Non Metals

TERM – II

- Chapter 4 - Carbon and its compound
- Chapter 5 - Periodic Classification of Elements.



CHEMISTRY MODULES

Module 10C - 1

Chapter: Chemical Reaction and Equations

Contents:

1. Chemical change
2. Chemical Reaction
3. Characteristics of chemical reactions
 - (i) Evolution of gas
 - (ii) Formation of precipitate
 - (iii) Change in colour
 - (iv) Change in state

Module 10C - 2

Chapter: Chemical Reaction and Equations

Contents:

1. Chemical equations
2. Writing a chemical equation
3. Balanced chemical equation.

Learning Objectives:

After the completion of the module students will be able to

1. Understand about chemical change and chemical reaction.
2. Appreciate characteristics of chemical reactions.
3. Significance of a chemical equation.

Key Terms:

Reactants, Products, Chemical equation, Precipitate

Module 10C - 3

Contents :

1. Types of Chemical Reactions.
 - (i) Combination Reactions.
 - (ii) Displacement Reactions.
 - (iii) Decomposition Reactions.
 - (iv) Double Displacement Reactions.
 - (v) Oxidation and Reduction.
 - (vi) Corrosion / Rancidity

Learning Objectives:

After the completion of the module students will be able to

1. Explain the examples of different types of chemical reactions.
2. Understand the methods to prevent corrosion and Rancidity.
3. Appreciate the significance of a chemical equation.

Key Terms:

Combination, Displacement, double displacement, Corrosion, Rancidity

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**Module 10 C - 4**

**Chapter: Acids, Bases and Salts**

**Contents :**

Understanding the chemical properties of acid and bases

1. Classification of substances as acids and bases on the basis of using indicator solution.
2. Reaction of acids and bases with Metals, Metal carbonate and Metal Bicarbonate.
3. Neutralization reaction.
4. Reaction of metallic Oxides with acids and reaction of non-metallic oxides with bases.

**Learning Objective:**

After the completion of the module students will be able to

1. Appreciate the term acid, bases and neutral substances.
2. Understand the classification of substance as acid and base.
3. Enlist and appreciate properties of acids and bases.

**Key Terms:**

Acids, Bases, Indicators, Metallic oxides, Non-Metallic Oxides

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Module 10 C - 5

Chapter: Acids, Bases and Salts

Contents :

What do all acids and all bases have in common.

1. Dilution of an acid, Preparation of acid solution, Preparation of base
2. How strong are acid or base solution
 - (i) pH Scale, Qualitative analysis of pH
 - (ii) Importance of pH in everyday life.

Learning Objective:

After the completion of the module the students will be able to :

1. Explain the strength of acidic and basic solution.
2. Understand the importance of pH.
3. Appreciate the importance of pH in everyday life.

Key Terms:

Power of hydrogen, Concentration, Alkali

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### Module 10 C – 6

#### Chapter: Acids, Bases and Salts

#### Contents :

1. Salts.
  - (i) Common salt, (salt derived from Common salt), Sodium Hydroxide
  - (ii) Sodium Carbonate, Sodium bicarbonate
2. Method and preparation of bleaching powder and Plaster of Paris.
3. Hydrated Salts.

### Learning Objective:

After the completion of the module the students will be able to :

- (i) Explain the preparation of various salts.
- (ii) Classify the uses of different salts.
- (iii) Appreciate the use of bleaching powder as bleaching agent.

### Key Terms:

Indicator, pH, Dilution, Hydronium Ion, Bleaching agent

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Module 10 C - 7

Chapter: Metals And Non - Metals

Contents :

1. Classification of elements as Metal and Non – Metals
 - (i) Physical properties of Metals and Non-Metals
 - (ii) Chemical properties of Metals
 - (a) What happens when metals are burnt in air
 - (b) Reaction of metals with water

(c) Reaction of metals with acids

Learning Objective:

After the completion of the modules the students will be able to :

1. Appreciate the difference between metals and non-metals on the basis of Physical and chemical properties.
2. Compare the chemical properties of different metals.

Key Terms:

Amphoteric oxide, Neutral Oxide, Basic Oxide

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**Module 10 C - 8**

**Chapter: Metals And Non - Metals**

**Contents :**

1. How do metals react with solutions of other metal salts.
2. Reactivity series.
3. How do metal and non metal react.
4. Formation and properties of Ionic compound.

**Learning Objective:**

After the completion of the module the students will be able to :

1. Enlist properties of ionic compound.
2. Understand the reactivity series.
3. Apply the knowledge of reactivity series to displacement reaction.

**Key Terms:**

Displacement, Reactivity, Ionic bond

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Module 10 C - 9

Chapter: Metals And Non - Metals

Contents :

1. Extraction of metal
 - (i) Enrichment of ores
 - (ii) Extracting metals low, middle in the activity series.
 - (iii) Extracting metals towards the top of the activity series.
 - (iv) Refining of metals.

2. Corrosion and prevention of corrosion
3. Alloying

Learning Objective:

After the completion of the module the learners will be able to.

1. Differentiate between Roasting and Calcination.
2. Explain the different methods of extraction used for different metals.
3. Recognize the factors that promote corrosion.
4. Appreciate methods used to prevent corrosion.

Key Terms:

Alloys, Rusting, refining, Corrosion, Calcination, Roasting

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**Module 10 C – 10**

**Revision for SA – I**

## Module 10C - 11

### Chapter: Carbon and its Compounds

#### Contents :

1. Bonding in carbon-The covalent bond.
  - (i) Allotropes of carbon.
  - (ii) Versatile nature of carbon.
  - (iii) Organic compounds.

#### Learning Objectives:

After the completion of the module students will be able to

1. Understand the different types of covalent bond and their formation.
2. Understand different conditions for the formation of covalent bonds and characteristics of covalent compounds.
3. Explain different allotropes of carbon.
4. Explain tetravalency of carbon and catenation.

#### Key Terms:

Catenation, Covalency, Covalent bond, Allotropes, Tetravalent

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Module 10C - 12

Chapter: Carbon and its Compounds

Contents :

1. Saturated and unsaturated carbon compounds.
2. Chains, Branches and Rings .
3. Homologous series.
4. Nomenclature of Carbon compounds.
5. Combustion, Oxidation, Addition Reaction substitution Reaction.

Learning Objectives:

After the completion of the module students will be able to

1. Give IUPAC names of various organic compounds.
2. Differentiate between saturated and unsaturated hydrocarbons.
- 3. Draw structure of various hydrocarbons.**

Key Terms:

Functional group, Homologous series, Saturated, Unsaturated, Hydrocarbons

~~~~~

## Module 10C - 13

### Chapter: Carbon and its Compounds

#### Contents :

1. Some important carbon compounds.
2. Ethanol and ethanoic acid.
3. Properties of ethanol.
4. Properties of ethanoic acid
5. Soaps and detergents

#### Learning Objectives:

After the completion of the module students will be able to

1. Explain properties of ethanol and ethanoic acid.
2. Understand chemical formula of soap and detergents.
3. Explain cleansing action of soap.

#### Key Terms:

Saponification, micelle, hydrophilic, hydrophobic

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Module 10 C - 14

Chapter: Periodic Classification Of Elements.

Contents :

1. Classification of elements by Dobereiner's triads.
 2. Newland's law of octaves.
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Module 10 C - 15

Chapter: Periodic Classification Of Elements.

Contents :

1. Mendeleev's classification of elements.
2. Limitations of Mendeleev's classification of elements.

Learning Objective:

After the completion of the module the Students will be able to.

1. Understand the term „classification“.
2. Assign Group and period to element in periodic table.
3. Appreciate the merits and demerits of Mendeleev's periodic table.

Key Terms:

Classification, Periodicity, periodic law

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**Module 10 C – 16**

**Chapter: Periodic Classification Of Elements.**

**Contents :**

1. The modern periodic table.
2. Position of elements in the modern periodic table.
3. Trends in the modern periodic table.
  - (i) Valency
  - (ii) Atomic size
  - (iii) Metallic and non metallic properties

**Learning Objective:**

After the completion of the module the learner will be able to.

1. Appreciate the factors affecting atomic radius.
2. Classify the element into various groups.
3. Understand the General properties of a group.

**Key Terms:**

Metallic, Non-Metallic character, Valency, atomic radii

**Module : 17 & 18:**

***Revision for SA – II***

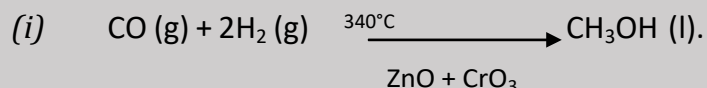
## ASSIGNMENTS

### Module : 1 & 2

- Q.1. What happens when (give equation also).
- (i) Potassium iodide solution is added to lead nitrate solution.
  - (ii) Dilute hydrochloric acid is added to zinc granules.
  - (iii) Water is added to quick lime.
  - (iv) Carbon-di-oxide gas passed through lime water.
- Q.2. (i) Give one chemical reaction characterised by the change in temperature.  
(ii) Give one chemical reaction characterised by the formation of precipitate.
- Q.3. Balance the following equations
- (i)  $\text{N}_2 + \text{H}_2 \longrightarrow \text{NH}_3$
  - (ii)  $\text{Al}(\text{OH})_3 + \text{H}_2\text{SO}_4 \longrightarrow \text{Al}_2(\text{SO}_4)_3 + \text{H}_2\text{O}$
  - (iii)  $\text{H}_2\text{O}_2 \longrightarrow \text{H}_2\text{O} + \text{O}_2$
  - (iv)  $\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \longrightarrow \text{CO}_2 + \text{H}_2\text{O}$
  - (v)  $\text{Pb}(\text{NO}_3)_2 \longrightarrow \text{PbO} + \text{NO}_2 + \text{O}_2$
- Q.4. Convey the following in the form of a balanced chemical equation.

“An aqueous solution of ferrous sulphate reacts with an aqueous of sodium hydroxide to form a precipitate of ferrous hydroxide and sodium sulphate remains in solution.”

- Q.5. What information does the following chemical equation convey?



- Q.6. Which of the following reactions are endothermic and which are exothermic.

- (i) Burning of natural gas
- (ii) Electrolysis of water
- (iii) Photosynthesis
- (iv) Respiration
- (v) Decomposition of calcium carbonate

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### Module : 3

- Q.1. What happens when AgCl is exposed to sunlight? Write a balanced chemical equation for this reaction. Also give one use of such reaction.
- Q.2. Crystals of copper sulphate are heated in a test tube for some time. What is the colour of copper sulphate -
- (i) before heating and
  - (ii) after heating

What is the source of liquid droplets seen on the upper side of the test tube during the heating process?

Q.3. When a green iron salt is heated strongly its colour finally changes to black and odour of burning sulphur is given out.

(i) Name the iron salt. (ii) Name the type of reaction.

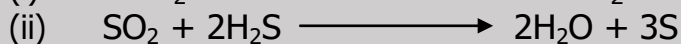
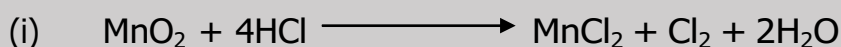
(iii) Write the chemical equation for the reaction involved.

Q.4. A colourless salt, when heated produce a yellow residue and brown fumes.

(i) Name the lead salt. (ii) Name the brown fumes and give its formula.

(iii) Write a chemical equation for the reaction involved.

Q.5. Name the substance oxidized and substance reduced in the following reactions.



Q.6. Name two antioxidants which are usually added to food containing fat and oil to prevent rancidity.

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### **H.O.T.S. Questions**

Q.1  $\text{H}_2\text{S} + \text{Cl}_2 \rightarrow \text{S} + \text{HCl}$

(i) Name the species undergoing oxidation.

(ii) Name the species undergoing reduction.

Q.2 Chloride of a metal (X) (which is used to make coins) when exposed to sunlight, turns grey from white. Name the type of reaction and identify X.

Q.3 Sodium bromide is added to an aqueous solution of a metal nitrate „A“. A yellow precipitate of „B“ is obtained which is used in photography. Compound „B“ is photosensitive and decomposes to its constituents, accompanied by the evolution of a reddish brown gas. Write down the balanced equation and identify A and B.

Q.4 Metal „A“ is found in the earth crust and on exposure to moist air, it form a reddish brown flaky substance. When a container made up of metal „A“ is used to store a blue coloured solution of „B“, the blue colour changes to pale green and reddish brown metal „C“ is formed. Identify A, B, C and write a balanced equation for the reaction. Also in name the type of reaction.

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## Value Based Question

Q.1. There are different types of chemical reactions occurring around us or being carried out for the benefit of mankind e.g. combustion reaction, decomposition reaction, redox and photochemical reaction.

Now, answer the following questions:

- (i) Combustion of coke is a combination reaction.  $\text{CO}_2$  is not a pollutant. Then why is combustion of coke harmful?
- (ii) What values have been added to our lives by electroplating? Give an example.
- (iii) How photochemical reactions have played an important role in photography?

Q.2. We have often seen that oily food if not used within a limited time gets stale and gives bad taste, bad smell and becomes unfit for consumption. This is due to oxidation of oils and fats present in the food.

Now, answer the following questions:

- (i) On marriage or other celebrations, a lot of food goes waste. What method do you suggest to prevent this wastage?
- (ii) Often preservatives are added to certain food stuff so that they can stay consumable for a longer time, but these preservatives are chemicals which may be harmful. What alternative do you suggest?
- (iii) What method of preservation of food items should be followed at home?

=====

## Experiment

1. To study the following chemical reactions and

- (a) Action of water on quicklime
- (b) Reaction of aq sol<sup>n</sup> of  $\text{BaCl}_2$  &  $\text{Na}_2\text{SO}_4$
- (c) Reaction of Iron nails on  $\text{CuSO}_4$
- (d) Dry heating of  $\text{FeSO}_4$  crystals

Classify them into:

- (i) Combination reaction
- (ii) Decomposition reaction
- (iii) Displacement reaction
- (iv) Double displacement reaction

2. (a) To observe the action of Zn, Fe, Cu and Al metals on the aqueous solution of zinc sulphate,  $\text{ZnSO}_4$  (aq).

(b) To observe the action of Zn, Fe, Cu and Al metals on the aqueous solution of ferrous sulphate,  $\text{FeSO}_4$  (aq).

(c) To observe the action of Zn, Fe, Cu and Al metals on the aqueous solution of copper sulphate,  $\text{CuSO}_4$  (aq).



- (d) To observe the action of Zn, Fe, Cu and Al metals on the aqueous solution of aluminum sulphate,  $\text{Al}_2(\text{SO}_4)_3(\text{aq})$ .

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**Module 4**

- Q.1. What colours do the following indicators turn when added to an acid and base separately  
(i) Litmus      (ii) Methyl orange      (iii) Phenolphthalein
- Q.2. What happens when zinc metal reacts with sodium hydroxide?
- Q.3. What happens when carbon dioxide gas is passed through lime water?  
(i) For short time and  
(ii) For a considerable time. Write equation of the reactions involved.
- Q.4. Give equations.  
(i) When an acid reacts with metal carbonate  
(ii) When an acid reacts with metal hydrogen carbonate
- Q.5. What happens when an acid reacts with a base? Give equation of the reaction involved what is the special name of this reaction?
- Q.6. What are Olfactory indicators? Name two substances which can be used as olfactory indicators.

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**Module : 5**

- Q.1. What is meant by strong acid and weak acids? Classify the following into strong acids and weak acids  
HCl,     $\text{CH}_3\text{COOH}$ ,     $\text{H}_2\text{SO}_4$ ,     $\text{HNO}_3$ ,     $\text{H}_2\text{CO}_3$
- Q.2. Two solutions A and B have pH values of 3 and 9.5 respectively. Which of this will turn litmus from blue to red and which will turn phenolphthalein from colourless to pink.
- Q.3. If the pH of soil is 4.2. What two chemicals farmer can mix to adjust the pH of soil. How chemicals will work.
- Q.4. Explain the pH change as the cause of tooth decay. How can tooth decay caused by pH change be prevented?
- Q.5. What happens during a bee sting? What is its remedy?

## Experiment

- To study the properties of an acids (for example dilute HCl) by its reaction with :
  - Litmus solution (blue and red),
  - Zinc metal,
  - Solid sodium carbonate.
- To study the properties of a base (for example dilute solution of NaOH) by its reaction with:
  - Litmus solution (blue and red),
  - Zinc metal,
  - Hydrochloric acid.

=====

## Module : 6

- What happens when a concentrated solution of sodium chloride is electrolysed? Write the equation of the reaction involved.
- A calcium compound which is yellow white powder is used as an disinfectant and also in textile industry. Identify the substance, give its chemical name and write the chemical reaction for its preparation.
- What happens when a cold and concentrated solution of sodium chloride reacts with ammonia and carbon dioxide? Write the equation of the reaction, which takes place.
- Describe how washing soda is produced starting from sodium chloride. Write equation of all reactions involved.
- What will happen if heating is not controlled while preparing Plaster of Paris?
- How is Plaster of Paris prepared? Write equation of the reaction involved.
- In addition to sodium hydrogen carbonate baking powder contains a substance X. Name the substance X. What is the role of the substance X in the baking powder?

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## H.O.T.S. Questions

- A reddish brown metal does not react with dilute hydrochloric acid but oxide of the same metal reacts with dilute hydrochloric acid to give blue green colour to the solution. Identify the metal and write balanced equation
- To solution „A“, phenolphthalein is added in a test tube the solution turns pink. On addition of dilute HCl slowly, pink colour of phenolphthalein disappears. Explain the reason for this observation. On the addition of little more solution. „A“ to the test tube, pink colour reappears. What is the nature of solution A?

Q.3 Compound „A“ is used for softening hard water and for the manufacture of glass. It reacts with dilute HCl to produce brisk effervescence of a colourless gas „B“, which is used to extinguish fire. This gas turns lime water milky and excess of this gas renders the solution colourless. Identify A and B and write down the sequence of reactions.

Q.4 When electricity is passed through an aqueous solution of compound „A“, used in daily meals it gives compound „B“ and two gases „C“ and D by chlor-alkali process. Identify A, B, C and D.

=====

### Value Based Question

Q.1. Common salt, washing soda and baking soda are very commonly used in our everyday life. Common salt is an essential ingredient of our diet. Washing soda is used in laundry.

Now, answer the following questions:

- (i) Some patients are suggested to use less quantity of salt. Explain the reason.
- (ii) In countries where it snows heavily roads were cleaned by sprinkling salt. Give reason.
- (iii) While making cake at home, a lady added baking soda in place baking powder. What do you think will happen?
- (iv) A lady asks you whether she should use soap or detergent. What advice will you give and why?

Q.2. The three important acids called mineral acid, are sulphuric acid, nitric acid and hydrochloric acid. In recent times bad elements are misusing these acids. A mixture of hydrochloric acid and nitric acid is being used to cheat women in the name of cleaning their gold jewelry.

Now, answer the following questions:

- (i) What steps should be taken to stop the incidents of acid throwing.
- (ii) What should be done to check the miscreants from cheating the women of their jewelry cleaning?

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### Experiment

To find the pH of the following by using pH paper/Universal Indicator:

- (a) Dilute hydrochloric acid
- (b) Dilute solution of sodium hydroxide
- (c) Dilute solution of ethanoic acid
- (d) Lemon juice
- (e) Water
- (f) Dilute solution of sodium bicarbonate

## Module: 7

- Q.1. Why are metals called electro positive element whereas non metals are called electronegative elements.
- Q.2. Metals are said to be shiny. Why do metals generally appear to be dull? How can their brightness be restored?
- Q.3. Which amongst the following is a metal and why?  
 $_{11}\text{X}$ ,  $_{14}\text{Y}$   $_{17}\text{Z}$
- Q.4. Give an example of
- (i) nonmetal good conductor of electricity
  - (ii) non metal having luster.
  - (iii) Non metal which is extremely hard.
  - (iv) Metals which are soft.
- Q.5. Name two metals which react with steam to form metal oxide and hydrogen gas. (give equation also)
- Q.6. Why hydrogen gas is not evolved when metals react with dilute nitric acid. Name two metals which can liberate hydrogen gas when react with very dilute nitric acid.

=====

## Module: 8

- Q.1. A copper coin was dipped in  $\text{AgNO}_3$  solution. After some time silver from the solution was deposited on the copper plate. State the reason why it is happened. Give the chemical equation of the reaction involved.
- Q.4. Name two metals which can not displace hydrogen from dilute hydrochloric acid. Give reason also.
- Q.5. The atomic number of an element X is 11
- (i) What must an atom X do to attain the nearest inert gas configuration.
  - (ii) Which inert gas is nearest to X.
- Q.6. Show the formation of  $\text{MgCl}_2$ ,  $\text{CaO}$ ,  $\text{CaCl}_2$  by the transfer of electrons.
- Q.9. Give reasons
- (i) Ionic compounds are solids at room temperature.
  - (ii) Ionic compounds are good conductors of electricity.

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**Module: 9**

- Q.1. Name two metals which are found in combined state.
- Q.2. Explain how, mercury is extracted from its sulphide ore cinnabar. Give equations of the reaction involved.
- Q.3. A zinc ore on heating in air forms sulphur dioxide. Describe any two stages involved in the conversion of zinc ore into a zinc metal
- Q.4. How is manganese extracted from manganese dioxide  $MnO_2$ ? Explain with the help of an reaction.
- Q.5. What is a thermite reaction? Explain with the help of an equation state one use of this reaction.
- Q.6. Why carbon can not reduce the oxides of sodium magnesium and aluminium to the respective metals.
- Q.7. An aqueous solution of sodium chloride is not used for the electrolytic extraction of sodium metal. Why? In which state of sodium chloride sodium is extracted.
- Q.8. How will you refine copper? Give a labelled diagram of the electrolytic cell used for the refining of the copper.
- Q.9. What are alloys? How they are made? State the main constituents of following alloys:
- |              |             |
|--------------|-------------|
| (i) Brass    | (ii) Solder |
| (iii) Bronze | (iv) Steel  |
- Q.10. Name one element each which is extracted by:
- |                                |                                 |
|--------------------------------|---------------------------------|
| (i) Reduction with carbon      | (ii) Electrolytic reduction     |
| (iii) Reduction with aluminium | (iv) Reduction with heat alone. |

**H.O.T.S. Questions**

- Q.1 A reddish brown metal „A“ does not react with dilute HCl and dilute  $H_2SO_4$ . It forms a black coating of oxide „B“ on heating. It react with conc.  $H_2SO_4$  to produce a gas which smells of burning sulphur. Identify A and B.
- Q.2 A metal „M“ has two electrons in the Valence shell and a non-metal „N“ has 7 valence electrons. Show bonding between M and N giving reason for the same. Predict its solubility in water.
- Q.3 An element „A“ forms an oxide with formula  $AO_2$ , which when dissolved in water turns blue litmus red. Identify whether A is a metal or non-metal. Give reason for your answer.

Q.4 Aqueous solution of  $ZnSO_4$ ,  $CuSO_4$  and  $FeSO_4$  are taken in three test tubes marked A, B and C respectively.

- (i) Aluminium powder is added to all the three solutions.
- (ii) All the test-tubes show colour change. Give reason for this observation and write balanced equations.

=====

### Value Based Question

Q.1. Aluminium is one of the most widely used metals. It is used in making automobiles parts, electric wires, toys, doors and windows.

Now, answer the following questions:

- (i) Why should we prefer to buy anodized articles than un-anodized article of aluminium.
- (ii) Oxygen of the air attacks iron as well as aluminium. Then why aluminium is considered better than iron for a number of purposes
- (iii) You want to get broken part of your iron machinery welded. If a mechanic does it by a thermite reaction. What material he is likely to use?
- (iv) Give two examples where you have seen the use of aluminium foil.

Q.2. Rusting is a serious problem. Every year large amount of money is spent to replace rusted iron and steel structure. A number of articles made of iron are used in everyday life are protected from rusting.

Now, answer the following questions:

- (i) A mechanic wants to protect his tools from rusting. What cheap method do you suggest to him?
- (ii) A person bought a bucket made of galvanized iron sheet but zinc coating get crack and iron got exposed. Do you think that now rusting of bucket will start? Why or why not?

=====

### Module : 10

### Revision for SA-I Exam

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### Module : 11

Q.1. Why does carbon form compounds mainly by covalent bonding?

Q.2. Draw electron dot structures of

- (i)  $CH_4$
- (ii)  $CCl_4$
- (iii)  $O_2$
- (iv)  $N_2$
- (v)  $H_2O$

Q.3. Write two points of difference in the structure of diamond and graphite.

Q.4. What is buckminsterfullerene?

Q.5. Why carbon can form exceptionally stable compounds with other elements?

Q.6. Give reasons :

- (i) Covalent compounds are bad conductor of electricity.
- (ii) Covalent compounds have low M.P. and B.P.

=====

**Module : 12**

Q.1. Give the general formula of alkane, alkene and alkyne. Identify alkene and alkyne from the following.

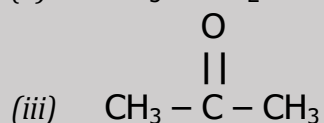
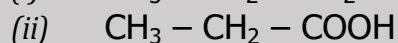
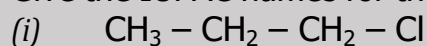


Q.2. Explain the meaning of saturated hydrocarbons and unsaturated hydrocarbon by taking molecule containing 3 atoms of carbon.

Q.3. Give the name and structural formula of an alkyl group containing 2 carbon atoms.

Q.4. Give the names and structure of one saturated cyclic hydrocarbon and one unsaturated cyclic hydrocarbon.

Q.5. Give the IUPAC names for the following.



Q.6. What do you mean by isomers? Draw and give formula of two isomers of butane and three isomers of pentane.

Q.7. Name the functional group / present in the following compounds:

- (i)  $\text{CH}_3\text{COOH}$                       (ii)  $\text{CH}_3\text{CH}_2\text{CHO}$                       (iii)  $\text{C}_2\text{H}_5\text{OH}$   
(iv)  $\text{CH}_3\text{COCH}_2\text{CH}_3$

Q.8. Give one equation of the substitution reaction of propane.

Q.9. Give one equation to show addition reaction of Ethene.

=====

### Module 13

Q.1. What happens when (give chemical equation)

- (i) Sodium reacts with ethanol.  
(ii) Ethanol is heated with conc.  $\text{H}_2\text{SO}_4$  at  $170^\circ\text{C}$ .  
(iii) Ethanol reacts with ethanoic acid in the presence of little of conc. Sulphuric acid.

Q.2. What is meant by denatured alcohol? What is the need to denature alcohol.

Q.3. Why acetic acid is commonly known as glacial acetic acid.

Q.4. What happens when ethanoic acid reacts with sodium carbonate? Write equation of the reaction involved.

Q.5. What happens when ethanoic acid reacts with sodium hydroxide? Write equation of the reaction involved.

Q.6. Why is common salt added during the preparation of soap?

Q.7. Give any two differences between detergents and soaps.

Q.8. What is saponification? Write the reaction involved in this process.

### H.O.T.S. Questions

Q.1 Compound „A“ with molecular formula  $\text{C}_2\text{H}_6\text{O}$ , when heated with conc.  $\text{H}_2\text{SO}_4$  gives compound „B“ with molecular formula  $\text{C}_2\text{H}_4$ . Identify A and B, write chemical equation and also mention the role of conc.  $\text{H}_2\text{SO}_4$ .

Q.2 A neutral compound X of molecular formula  $\text{C}_2\text{H}_6\text{O}$  on oxidation with acidified potassium dichromate gives an acidic compound Y. Compound X and Y reacts on warming in the presence of conc.  $\text{H}_2\text{SO}_4$  to give a sweet smelling substance Z. What are X, Y and Z. Give relevant equations.



- Q.3 An organic compound X of molecular formula  $C_2H_4O_2$  gives brisk effervescence with sodium hydrogen carbonate. Give name and formula of X. Give equation also.
- Q.4 A cyclic compound has  $C_6H_{12}$ . Draw its structure and find the number of covalent bonds in it.

=====

### Value Based Question

- Q.1. Fossil fuels have become an integral part of our daily lives. They are used as fuel to generate electricity and heat our homes. Besides these advantages they have adverse effect on environment. Burning of these fuel releases lot of pollutants into the atmosphere like sulphur dioxide, Carbon di oxide etc. these gases also have adverse effect on human health. These gases also come back to earth's surface when it rains as acid rain, which harms the aquatic life.

As a student what is your opinion on the use of fossil fuels? Should its use be banned?

- Q.2. Ethanol commonly called as alcohol is an excellent solvent, is used in medicines and is an important chemical compound involved in synthesis of many chemical compounds. However in spite of its benefits to man, its impact on social behavior has always been questioned. Media has often show abnormal behavior of people while drunk.

Now, answer the following questions:

- (i) Comment on the statement –“Should production of alcohol be banned”. Give three valid reasons to justify.
- (ii) As a student what initiative would you take in the common concern of „Save Life, Do not Drink“. Give two suggestions.

=====

### Experiment

- To study the following properties of acetic acid (ethanoic acid,  $CH_3COOH$ ):
  - Odour
  - Solubility in water
  - Effect on litmus
  - Reaction with sodium bicarbonate
- To study saponification reaction for preparation of soap.
- To study the comparative cleaning capacity of a sample of a soap in soft and hard water.

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**Module: 14 & 15**

- Q.1. A B and C are the elements of a Dobereiner's law of triad? If the atomic number of A is 40 and that of C is 137, what should be atomic mass of B?
- Q.2. What were the limitations of Dobereiner's classification of elements?
- Q.3. State Newland's law of octave.
- Q.4. Which property of atoms formed the basis of Mendeleev's periodic table?
- Q.5. Why did Mendeleev leave some gaps in the periodic table?
- Q.6. Which group of elements was missing from Mendeleev's periodic table?
- Q.7. What were the major anomalies of Mendeleev's periodic table?
- Q.8. State Mendeleev's Periodic Law.

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**Module: 16**

- Q.1. State modern periodic law.
- Q.2. Give two examples each  
*(i)* group 1 element *(ii)* group 17 element *(iii)* group 18 element,
- Q.3.

| Group \ Period | 1 | 2 | 3 - 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|----------------|---|---|--------|----|----|----|----|----|----|
| 2              |   | A |        |    |    | D  | E  | F  |    |
| 3              | X |   |        |    |    |    |    | G  | I  |
| 4              | Y |   |        | B  | C  |    |    | H  |    |
| 5              | Z |   |        |    |    |    |    |    |    |

Now answer the following questions:

- (i)* The most reactive metal and non-metal.
- (ii)* The elements which is called alkaline earth metal.
- (iii)* The elements for which gaps were left by Mendeleev's in the periodic table.
- (iv)* The gases which are present in the atmosphere.
- (v)* Name the family of elements represented by F, G and H.
- Q.4. Give reasons
- (i)* Elements in the same period have different valency.
- (ii)* Elements in the same group have same valency.
- Q.5. Why does size of the atom progressively become smaller when we move from sodium to chlorine in the third period of periodic table?

- Q.6. Properties of the elements are given below. Where would you locate the following elements in the periodic table?
- (i) A soft metal stored under kerosene.
  - (ii) An element with variable valency stored under water.
  - (iii) An element which is an inert gas with atomic no. 2
  - (iv) An element which is tetravalent and forms the basis of organic chemistry.
- Q.7. Why size of potassium is bigger than sodium.
- Q.8. Atomic number of a few elements are given below 10, 20, 7, 14
- (i) Identify the elements.
  - (ii) Identify the group number of these elements in the periodic table.
  - (iii) Identify the periods of these elements in the periodic table.
  - (iv) What would be the electric configuration of each of the element?
  - (v) Determine the valency.
- Q.9. (i) How does the chemical reactivity of alkali metals vary on going down in group 1 of the periodic table?
- (ii) How does the chemical reactivity of the halogens vary on going down in group 17 of the periodic table?

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### Value Based Question

Q.1. Toxic metals can be present in industrial, municipal and urban run-off which can be harmful in small amounts .It enters the human body in many ways. It is found in trace amount s in various foods notably fish, which are heavily subjected to industrial pollution. If lead build up occurs, health problems including damage to nervous system, mental retardation and even death can occur.

How can you save yourself from the harmful effects of heavy metal like lead?

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### H.O.T.S. Questions

Q.1 Identify the following:

- (i) An element with 7 electrons in M shell.
- (ii) An alkali metal.
- (iii) Most reactive element of group 17.

Q.2 An element belongs to the 4<sup>th</sup> period and 2<sup>nd</sup> group of the periodic table:

- (i) What is its atomic number?
- (ii) Is it a metal or non-metal?
- (iii) What is its valency?
- (iv) What type of bond will it form when it combines with a halogen?

Q.3 Arrange Be, O, N, Li, C, B in increasing order of atomic radii. What is the common feature of these elements?

Q.4 The electronic configurations of a few elements are given below:

(a) 2, 8, 8, 1

(c) 2, 8, 3

(b) 2, 8, 2

(d) 2, 8, 4

- (i) Which one of the most electropositive?
- (ii) Which element is present in the 13<sup>th</sup> group?
- (iii) Which element will form covalent bond?
- (iv) Which element would show +2 valency?

Q.5 An element „E“ can combine with Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup> to form compounds with formulae ECl<sub>2</sub>, EBr<sub>2</sub>, EI<sub>2</sub> respectively.

- (i) What is the no. of valence electrons in E?
- (ii) What is the valency of E?
- (iii) To which group the element E belongs?
- (iv) Is it a metal or non-metal?

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BIOLOGY MODULES

Module : 1

Chapter – Life Processes

Contents

1. What is meant by life processes?
2. Differences between living and non-living.
3. Molecular movements in living beings
4. Brief idea of various life processes
5. Autotrophic nutrition

Learning Objective

The students will be able to understand :

1. It is not enough to use visible movements as defining characteristic of life.
2. Why molecular movements are needed for life.
3. Various functions of food.
4. Heterotrophs depend directly or indirectly on autotrophs for food.
5. Various steps in photosynthesis.
6. Chlorophyll, CO₂ and sunlight are necessary for photosynthesis.
7. Opening and closing of stomatal pore.
8. Other materials required by autotrophs.

Key Terms

Life Processes, Molecular movement, Nutrition, Autotrophs, Photosynthesis, Chlorophyll, Stomata, Guard cells

Module : 2

Chapter – Life Processes

Contents

1. Types of heterotrophic nutrition
2. Nutrition in amoeba, paramecium
3. Nutrition in human beings

Learning Objective

The students will be able to understand :

1. Various types of heterotrophic nutrition-holozoic, saprophytic, symbiotic.
2. Various steps in the process of nutrition in amoeba and paramecium.
3. Various steps of nutrition in humans-ingestion, digestion, absorption, assimilation, egestion.
4. Role of various enzymes in digestion.

Key Terms

Saprophyte, Parasite, Holozoic, Enzymes, Peristaltic movement, Villi

Module : 3

Chapter – Life Processes

Contents

1. Respiration in humans and animals

Learning Objective

Students will be able to understand :

1. The different ways by which glucose is broken down to release energy.
2. Gaseous exchange in plants.
3. Respiration in fish and terrestrial animals.
4. Human respiratory system.

Key Terms

Respiration, ATP, Haemoglobin

Module : 4

Chapter – Life Processes

Contents

1. Functions of blood
2. Structure and functions of heart

Learning Objective

Students will be able to understand :

1. The role of blood in transportation of different substances.
2. Internal structure of heart.
3. Importance of double circulation.

Key Terms

Atrium, Ventricle, Valves, Septum, Double circulation

Module : 5

Chapter – Life Processes

Contents

1. Arteries, veins and capillaries

2. Lymph
3. Transport of water and food in plants

Learning Objective

Students will be able to understand :

1. Differences between arteries, veins and capillaries.
2. Role of lymph
3. Movement of water and minerals during transpiration in trees.
4. How transport of food and other substances take place.

Key Terms

Platelets, Lymph, Vessels, Transpiration, Translocation, Xylem, Phloem

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### **Module : 6**

### **Chapter – Life Processes**

### **Contents**

1. Excretion in human beings
2. Excretion in plants

### **Learning Objective**

Students will be able to understand:

1. Structure and function of organs associated with excretory system in human beings.
2. Structure and functions of nephron.
3. Excretory products of plants.

### **Key Terms**

Nephron, Selective Reabsorption, Ultrafiltration

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Module : 7

Control and Co-ordination

Contents

1. Nervous system in animals
2. Reflex action
3. Central nervous system and Peripheral nervous system.
4. Brain and nerves.

Learning Objective

Students will be able to understand :

1. Function of receptors located in sense organs.

2. How impulses are transmitted.
3. What happens in reflex actions.
4. Working of CNS and PNS.
5. Structure and functions of different parts of brain.

Key Terms

Receptors, Synapse, Electrical Impulse, Reflex Action, Reflex Arc, Central Nervous System, Peripheral Nervous System, Cerebrum, Cerebellum

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## **Module : 8**

### **Chapter – Control and Co-ordination**

#### **Contents**

1. How nervous tissue causes action.
2. Co-ordination in plants.
3. Hormones in animals.

#### **Learning Objective**

Students will be able to understand :

1. Muscle action takes place due to change in shape and arrangement of cells.
2. Why immediate response to stimulus takes place in certain plants.
3. Various growth movements in plants.
4. Role of plant hormones – auxins, gibberellins, cytokinins, abscisic acid.
5. Role of hormones in human body.

### **Key Terms**

Tropism, Auxins, Gibberellins, Cytokinins, Abscisic Acid, Hormones, Endocrine Glands, Feedback mechanism

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Module : 9

Chapter – How do Organisms Reproduce?

Contents

1. Why do organisms reproduce?
2. Do organisms create exact copies of themselves?
3. Importance of variation
4. Modes of reproduction
5. Sexual reproduction in flowering plants

Learning Objective

Students will be able to understand :

1. DNA copying and additional cellular apparatus is produced during reproduction.
2. Variation is useful for survival of species over time.
3. Various modes of asexual reproduction – fission, fragmentation, regeneration, budding, vegetative propagation, spore formation
4. Why do organisms undergo sexual reproduction?
5. The mechanism of sexual reproduction in plants.

Key Terms

DNA, Variation, chromosome, gametes, pollination, germination

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## Module : 10

### Chapter – How do Organisms Reproduce?

### Chapter – Heredity and Evolution

#### Contents

1. Reproduction in human beings
2. Male reproductive system
3. Female reproductive system
4. Reproductive health
5. Accumulation of variations during reproduction.
6. Rules for inheritance of traits – Mendel’s contributions

#### Learning Objective

Students will be able to understand :

1. The various changes that take place at the onset of puberty in boys and girls.
2. Structure and functions of male reproductive system.
3. Structure and functions of female reproductive system.
4. How fertilization and development of foetus takes place in the female body.
5. Sexually transmitted diseases and their prevention.
6. Family planning measures.
7. How sexual reproduction leads to variations in offsprings.
8. Mendel’s experiments with pea plants showing how traits are inherited.
9. Genes control all characteristics.

### Key Terms

Puberty, Sperms, Ovum, Embryo, Placenta, Menstruation, STD, Variation, Heredity, Traits, Self Fertilization, Cross Fertilization, Independent Inheritance

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Module : 11

Chapter – Heredity and Evolution

Contents

1. How do traits express themselves?
2. Sex determination in humans
3. How has evolution taken place – a basic idea.
4. Acquired and inherited traits
5. Speciation

Learning Objective

Students will be able to understand :

1. In human beings, sex of child depends on whether paternal chromosome is (X) (for girls) or (Y) (for boys).
2. Variations in a species may confer survival advantages or merely contribute to genetic drift.
3. That changes in non-reproductive tissues caused by environmental factors are not inherited.
4. That speciation may take place when variation is combined with geographical isolation.

Key Terms

Sex Determination, Evolution, Acquired traits, Inherited traits, Speciation

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## **Module : 12**

### **Chapters – Heredity and Evolution, Our Environment**

#### **Contents**

1. Evolution and classification
2. Human evolution
3. Action of micro organisms on waste
4. Components of ecosystem
5. Food chain and food webs

### **Learning Objective**

Students will be able to understand :

1. That evolutionary relationships are traced in the classification of organisms.
2. Evolution can be worked out by the study of fossils.
3. That complex organs may have evolved because of survival advantage of even intermediate stages.
4. During evolution, various adaptations also have taken place.
5. Evolution is not just "progress" from "lower" to "higher" forms.
6. Human beings originated from a single species that evolved in Africa.
7. Difference between biodegradable and non biodegradable waste.

8. Role of decomposers in an ecosystem.
9. Flow of energy in food chains.

### **Key Terms**

Homologous and Analogous organs, Fossils, Ecosystem, Trophic Levels, Energy flow

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Module : 13

Chapter – Our Environment

Contents

1. Affect of human activities on environment
2. Methods to save our environment
3. Why do we need to manage our resources?
4. Forests and wild life
5. Sustainable management

Learning Objective

Students will be able to understand :

1. How human activities are leading to depletion of ozone layer.
2. Methods to manage our garbage.
3. The importance of the 3R"s → Reduce, Recycle, Reuse
4. Management of forest resources has to take into account the interest of various stakeholders.
5. Role of people in sustainable management.

Key Terms

Biological Magnification, CFCs, Biodiversity, Wild Life Conservation, Sustainable Management

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## **Module : 14**

### **Chapter – Management of Natural Resources**

#### **Contents**

1. Water for all
2. Water harvesting
3. Coal and Petroleum

#### **Learning Objective**

Students will be able to understand :

1. How water can be harnessed by various methods.

2. Fossil fuels like coal and petroleum need to be used judiciously.

**Key Terms**

Water Harvesting



**Module : 15**

**Chapter – Sources of Energy**

**Contents**

1. Improvement in technology for using conventional sources of energy.
2. Use of biomass and wind energy.
3. Environmental consequences
4. How long will energy sources last us?

**Learning Objective**

Students will be able to understand :

1. How biomass and wind can be used to produce energy?
2. What are the effects on environment by the use of different fuels?
3. Exhaustible and inexhaustible sources of energy.

**Key Terms**

Bio mass, Bio gas plant, Digester



**Module : 16 :                    Revision**



## **ASSIGNMENTS**

### **Module – 01**

- Q.1. Why is there a controversy that virus are truly alive or not?
- Q.2. Give the energy transformation that takes place during photosynthesis.
- Q.3. Define photosynthesis.
- Q.4. What is the source of oxygen given out during photosynthesis?
- Q.5. Give two differences between light reaction and dark reaction.
- Q.6. What is the mechanism of opening and closing of stomata?
- Q.7. Draw a neat and labelled diagram showing cross section of a leaf.

### **Module – 02**

- Q.1. List the main steps of holozoic mode of nutrition.
- Q.2. With the help of diagrams, explain how nutrition takes place in amoeba.
- Q.3. Where does the process of digestion start in humans? What is digested here?
- Q.4. Which movement helps to push food forward in our gut? Describe it.
- Q.5. Bile juice has no digestive enzyme, still it is considered very important. Why?
- Q.6. How are proteins carbohydrates and fats digested in our body?
- Q.7. Draw a neat and labelled diagram of human alimentary canal.

- =====
- Q.1. What are the functions of :

- (i) Fine hair in nostrils
- (ii) Rings of cartilage around trachea
- (iii) Haemoglobin in blood

- Q.2. Describe the mechanism of breathing.
- Q.3. With the help of a flowchart, show the different pathways by which glucose can be broken down.
- Q.4. What is residual volume in lungs? What is its importance?

### **Module – 04/05**

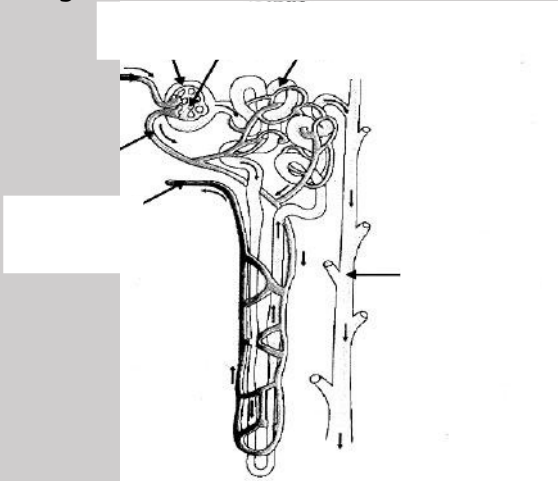
- Q.1. What is plasma? What is its function?
- Q.2. Differentiate between arteries and veins.
- Q.3. What is the importance of capillaries?

- Q.4. Discuss the role of valves in maintaining blood flow.
- Q.5. Name the valve present between  
 (i) Left atrium and left ventricle      (ii) Right atrium and right ventricle
- Q.6. How is lymph formed?
- Q.7. Draw a diagram of human heart and label  
 (i) Aorta      (ii) Pulmonary vein      (iii) Superior vena cava  
 (iv) Left ventricle

=====

**Module - 06**

- Q.1. Define excretion.
- Q.2. What is the functional unit of a kidney?
- Q.3. Which artery brings blood to the kidneys?
- Q.4. Which part of the nephron acts as a filter?
- Q.5. What happens to the glucose that enters along with the filtrate in the nephron?
- Q.6. State two vital functions of the human kidney?
- Q.7. Name two waste products that are stored in plants.
- Q.8. Draw neat and labeled diagrams of excretory system
- Q.9. Identify and label the parts marked in the diagram drawn below.



=====

**Value Based Question**

- Q.1. Water plays an important role in plant life processes like photosynthesis and transpiration. Most of the water absorbed is lost through transpiration and still it is not considered as wastage but necessary. Now answer the following questions:

- (i) How water can be saved while growing plants on land available in the house?
- (ii) How reduction of water wastage would help?

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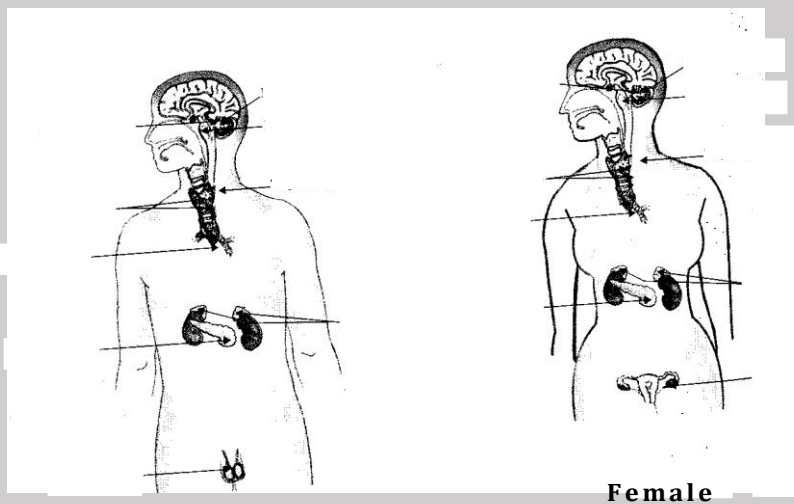
**Module 07**

- Q.1. Which two tissues help in control and coordination in animals?
- Q.2. Name the receptors present in ears, nose and tongue.
- Q.3. What happens at the synapse between two neurons?
- Q.4. Give one word for:
  - (i) the bony box that protects that skull -----
  - (ii) the fluid that provides shock protection to the brain -----
  - (iii) Number of cranial nerves in man -----
  - (iv) Number of spinal nerves in man -----
  - (v) Growth inhibiting phytohormone -----
  - (vi) Plant hormone inhibiting cell division -----
  - (vii) Master gland of the body -----

=====

**Module 08**

- Q.1. What are the three parts of Human Brain? What are their functions?
- Q.2. How does nervous tissue lead to action in muscles?
- Q.3. "Pancreas are the overall controller of blood glucose level." Justify.
- Q.4. Iodine deficiency goiter is brought about by the deficiency of which hormone?
- Q.5. Label the parts marked in the following diagrams :



Male

Female

=====

**Value Based Question**

- Q.1. Recently, our science teacher discussed with us „Control and coordination in Animals“. He told us that two systems, namely, nervous system and endocrine system help to regulate all body functions. He also told us that in society adolescents are increasingly becoming addict to alcohol drinking and how alcohol is affecting their body.
- (i) Give at least three ways in which health of people is affected after consuming alcohol regularly.
  - (ii) What role government should play to check alcohol drinking especially by adolescents? Give at least two suggestions.

=====

**Module 09**

- Q.1. Why is just DNA copying not enough for reproduction?
- Q.2. With the help of labeled diagrams explain
- (i) Regeneration in Planaria
  - (ii) Budding in hydra
- Q.3. Explain why the amount of DNA remains same and does not double up in each new generation during sexual reproduction?
- Q.4. Differentiate between:
- (i) Unisexual and bisexual flowers
  - (ii) Fertilization and germination
- Q.5. Explain the entire process of sexual reproduction in plants starting from germination of pollen grains on stigma till the formation of embryo. Draw diagram also.
- Q.6. What are the post fertilization changes in a flower?
- Q.7. What are the advantages of vegetative propagation?

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**Value Based Question**

- Q.1. You have studied the two major means of reproduction in plants. Sexual reproduction involves formation of seed through fusion of two gametes and asexual reproduction involves the use of various vegetative parts of the plant to form new plants.
- (i) Why do certain plants use means of asexual reproduction and not the seeds? Name few such plants.



- (ii) Why the seeds of desired quality are not being formed in asexually propagating plants?

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### Module 10

- Q.1. Why do the reproductive tissues mature at a later stage in life in humans?
- Q.2. List the changes that occur in boys and girls at the time of puberty.
- Q.3. What are gonads?
- Q.4. Give another name for male germ cells and female germ cells.
- Q.5. What is ovulation?
- Q.6. Name the male sex hormone. Give its two functions.
- Q.7. Why are testes located outside the abdominal cavity?
- Q.8. Draw a neat and labeled diagram of the male reproductive system.
- Q.8. Draw a neat and labeled diagram of the female reproductive system.
- Q.9. Where does fertilization take place?
- Q.10. Where does the development of zygote take place?
- Q.11. Define heredity.
- Q.12. Who is known as the father of genetics? Name the plant on which he worked? Why did he select this plant?
- Q.13. (i) .....pairs of contrasting characters were observed by Mendel in pea plants.  
(ii) An organism with two identical alleles of a gene in a cell is called.....
- Q.14. State Mendel's First and Second laws of heredity.
- Q.15. What does small inaccuracies in DNA lead to?

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### Module 11

- Q.1. Differentiate between phenotype and genotype of an organism.
- Q.2. Why are acquired characters not inheritable?
- Q.3. Distinguish between autosomes and sex chromosomes.
- Q.4. A tall pea plant is self pollinated. The progeny were both tall and short in the ratio of 3 : 1. What can you deduce about the characteristics of the genotype of the parents of the tall pea plant?

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### Value Based Question

- Q.1. Jatinder lives in a joint family. He has keen interest in biology. One day, he asked his father, a biology teacher, why his sister had striking resemblance with her mother and why he resembled a great deal with his grandfather although his brother had marked differences from all of them. Also he queried why an elephant resembles other elephants and a rose plant looks like other rose plants. His father explained to him that similarities and differences among members of species are not coincidental. These are, in fact, transmitted from parents to the offspring, i.e., from one generation to the next generation through hereditary units present on chromosomes.
- (i) What is the term used for transmission of resemblances and differences from parents to the offspring?
  - (ii) Name the vehicle of heredity, i.e., the unit of inheritance of characters from one generation to the next generation.
  - (iii) Who did pioneer work related to the inheritance of characters? Which biological material did he use for his studies?
  - (iv) As a biology teacher, how did Jatinder's father satisfy his son's query and maintain his interest in biology?

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### Module 12

- Q.1. Can wings of butterfly and birds be considered as homologous organs? Why or why not?
- Q.2. What do you mean by "evolution by stages?" Explain it in the case of eye, feathers and cabbage.
- Q.3. How has the study of fossils helped us in understanding evolution?
- Q.4. Archaeopteryx has characters of both ----- and -----.
- Q.5. of man is homologous to limbs supporting wings of birds.
- Q.6. is a vestigial organ present in the human body.
- Q.7. Differentiate between food chain and food web.
- Q.8. "Flow of energy in a food chain is unidirectional." Explain.
- Q.9. Why do food chains consist of 3 or 4 steps only?
- Q.10. Grass → Grasshopper → Frog → snake → eagle
- If 500 J of energy is available to the grasshopper, how much of the energy will be available to the eagle and why?

- Q.1. Give one useful and one harmful effect of ozone.
- Q.2. What is the affect of UV rays on ozone?
- Q.3. Explain the 3R"s to save the environment.
- Q.4. List the various stakeholders in forests.
- Q.5. Explain with an example that the prejudice against the traditional use of forests has no basis?
- Q.6. Write a short note on " Chipko Andolan"
- Q.7. Who was Amrita Devi Bishnoi? What is the role of Bishnoi community in conservation in Rajasthan?

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**Value Based Question**

- Q.1. In the class, science teacher was teaching students about consequences of human present day life styles. He told us about harmful effects of our present eating habits, daily stresses, accumulation of waste due to advanced technology, about our changed attitudes as well as about present day life style diseases. He then asked us to come prepared for the class test the next day.
  - (i) Name the two factors that have contributed to the deterioration of our environment.
  - (ii) Why do we generate lot of waste now a days? Give two reasons.
  - (iii) Name at least two present day life style disease.

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**Module 14**

- Q.1. What are dams? Why is there a need to construct dams?
- Q.2. What are the three main problems that arise due to construction of large dams?
- Q.3. What is water harvesting? What is its need?
- Q.4. With the help of a diagram, explain the traditional (khadin) water harvesting system.
- Q.5. Differentiate between exhaustible and inexhaustible source of energy.
- Q.6. What are the harmful effects of using coal and petroleum?

- Q.1. What is biomass?
- Q.2. Draw a neat and labeled diagram of a biogas plant?
- Q.3. What are the limitations of wind energy?
- Q.4. Discuss biogas plant with respect to –
  - (i) Raw materials required
  - (ii) Role of anaerobes
  - (iii) Advantages over other fuels
  - (iii) Uses

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**Value Based Question**

- Q.1. Water finds a very important place in our life. However, a large proportion of world population has no access to drinking water. Also, around 4 million people die of various water-borne diseases every year. Availability of safe drinking water is given priority as a human right.
  - (i) What makes water unsafe for drinking?
  - (ii) What steps an individual should take to make water fit for drinking?

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