STANDARD

SCIENCE

Class-6

TEACHER GUIGE

INDEX

DISTRIBUTION OF SYLLABUS

There are twelve (12) Chapters in Standard Science Book for Class-VI. these Chapters are useful for Class-VI Students. According to Syllabus, this standard Science book is divided into three terms. Each term consists of Four Chapters. The further detail of Syllabus is given as follows:

(DISTRIBUTION OP SYLLABUS FOR FIRST TERM)

The first term consists of Four Chapters. These Chapters are useful for VI Class Students. These Chapters are under as follows.

SNo:	CHAPTER No:	CHAPTER NAME
01	CHAPTER-01	Science and Scientific Method
02	CHAPTER-02	Biology (The Life and its aspects)
03	CHAPTER-03	Human Body and its System.
04	CHAPTER-04	Environment (Adaptive Features of Animals and Plants.

DISTRIBUTION OF SYLLABUS FOR SECOND TERM

The second term consists four chapters. These chapters are useful for VI Class Students. These chapters are under as follow.

SNo:	CHAPTER No:	CHAPTER NAME
01	CHAPTER-05	Chemistry (Introduction to Chemistry)
02	CHAPTER-06	Chemistry of Air
03	CHAPTER-07	Chemistry of Water.
04	CHAPTER-08	Solution and Suspension

DISTRIBUTION OF SYLLABUS FOR FINAL TERM

The final term consists of Four Chapters. These Chapter: are useful for VI Class Students. These Chapters are under as' follows.

SNo:	CHAPTER No:	CHAPTER NAME
01	CHAPTER-09	Physics (Introduction to Physics
02	CHAPTER-10	Measurement
03	CHAPTER-11	Force and Mechanics
04	CHAPTER-12	Simple Machine

NOTES FOR TEACHER

CHAPTER-01	SCIENCE AND SCIENTIFIC METHODS

Introduce the term science to the students. Discuss with students different scientific concepts and branches of science. Take children to garden and zoo and teach them plant science and Animal science. Take children to science lab and introduce them scientific apparatus. Tell them safety rules of laboratory.

CHAPTER 02	BIOLOGY THE STUDY OF LIFE AND ITS ASPECTS

Introduce the term Biology to the students. Tell them meaning and importance of Biology. Tell themjTjstoryof Biology. Tell them branches of Bilogy such as plant Biology and Animal Biology. Teach them Islamic teaching and Biology. Tell them meaning and functions of cells and parts of the cell.

CHAPTER-03	HUMAN BODY AND ITS SYSTEMS

Tell the main parts of body and functions of body to the students. Tell them various system of body. Define them need and importance of system. Bring posters, charts from students and show them organ systems and various function. Discuss importance of each organ make the children feel their bo and muscles.

CHAPTER-04	ENVIRONMENT ADAPTIVE FEATURES OF ANIMALS

Introduce the term Environment to the students. Tell them adaptive features of animals. Tell them various habitats of animals and plants. Discuss with students some characteristics of domestic animals and distinguish them from wild animals. Show students different parts of flowering plants with sample. Make a flow chart on adaption groups of animals.

CHAPTER-05	CHEMISTRY INTRODUCTION TO CHEMISTRY

Introduce the term chemistry to the students.Tell them definition of chemistry. Tell them historical background of chemistry. Tell them importance of chemistry. Take students to the scientific lab and tell them some important chemicals. Tell them why we study chemistry.

CHAPTER-06	CHEMISTRY OF AIR

Tell the chemistry of air to students. Tell them

composition of air. Tell them name of important gases which are in air. Tell them function of air. Discuss the importance of Nitrogen, oxygen and Carbon dioxide with students. Define them atmospheric pressure. Ask them what happens if there is no air.

CHAPTER-07	CHEMISTRY OF WATER

Tell the chemistry of water to students. Tell them composition of water. Tell them types of water. Tell them water cycle. Tell them uses and importance of water.Tell them different concepts,of lavoiser and convendish on water. Ask them what happens if there is no water.

CHAPTER-08	SOLUTION AND SUSPENSION

Introduce the terms solution and suspensions to students. Define the meaning of solution and suspension. Tell them components of solution. Tell them types of solution. Ask them various examples of solution of daily life.Tell them meaning of solubility and crystallization.

CHAPTER-09	PHYSICS INTRODUCTION TO PHYSICS

Introduce the term physics to students.Tell them definition of physics. Tell them the historical background of physics. Tell them important Islamic teachings on science (physics). Tell them importance of physics. Tell them uses of technology in physics. Tell them space astrology.

CHAPTER-10	MEASUREMENT

Introduce the term measurement to students. Tel! them meaning and uses of measurement in daily life. Tell them why we measure things. Introduce them various measuring instruments. Also themjjses and importnace of measuring instruments.

CHAPTER-11	FORCE AND MECHANICS

Introduce the terms Force and Mechanics. Tell them meaning of Force with daily life examples. Tell them meaning of mechanics. Tell them types Of force. Tell them meaning of Friction and advantages of Friction. Ask them what is role of force and mechanics in our daily life.

CHAPTER-12	SIMPLE MACHINE

Introduce the term simple Machine. Tell them meaning and importance of machine. Tell them purpose of machine. Tell them types of machines. Ask them different names of

machines which are useful in our daily life. Also disucss them mechanical advantages of simple machines.

CHAPTER-01	SCIENCE AND SCIENTIFIC METHODS

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. The word science is derived from_____ word scientia.
(Greek, Latin, Sanskrit)
02. The word scientia means_____.
(Ability, Knowledge, Skill).
03. _____ is the systematic study of nature and how affects us and the environment.
(Science, Scientific name, classification)
04. The study of life is called _____ .
(Biology, Psychology, Sociology)
05. The study of formation and properties of matter is called _____.
(Kheem, chemistry, Chemicology)
06. The study of structure of the earth is called _____.
(Geology, Thermology, Geography)
07. _____helps us to understand the world around us.
(Science, Genetics, Mechanics)
08. The study of science is not just for_____.
(Electrician, scientist, Technician)
09. _____ needs to know the science of mixing colours and painting materials.
(Artist, Teacher, Scientist)
10. A photographer needs science to know the nature of _____so as to take good photograph.
(Light, Water, Dark)
11. Science experiments are usually performed in the_____
(Laboratory, Library, Green house)
12. We must follow laboratory_____rules.
(daily, common, safety)

ANSWER KEY

01	Latin	02	Knowledge
03	Science	04	Biology
05	Chemistry	06	Geology
07	Science	08	Scientist
09	Artist	10	Light
11	Laboratory	12	Safety

SHORT ANSWER AND QUESTIONS

Q1: What is science?

Ans: SCIENCE:

The word science is derived from the Latin word "scientia" which means knowledge.

Science is the systematic study of nature and how it affects us and the environment.

Q2: Write some natural phenomena.

Ans: Some natural pehnomena:

(1) Colours in rainbow.
(2) Formation of the solar system.
(3) Motion of bodies.
(4) Dropping of an apple from tree.
(5) Rusting of an Iron.
(6) Chemical reaction.
(7) Growth of animals and plants.

Q3: Name the main branches of science.

Ans: Main branches of Science are:

☆ Biology
☆ Physics
☆ Geology
☆ Chemistry
☆ Astronomy

Q4: What is technology?

Ans: The way in which scientific discoveries are used to build machines and to make our lives easier and more omfortable is called technology.

Q5: Define the terms.

Ans (1) Scientist:

A person who studies science is known as scientist.

(2) Laboratory:

A place where scientist works or study science is called laboratory.

Q6: What is scientific method?

Ans: Scientific Method: In acquaring knowledge we use the scientific method. The scientific method is the

common method used by scientists in their investigation.

OR

The method by which scientific problems are solved easily is called scientific method.

Q7: What is meant by communicating effectively?

Ans: Communicating Effectively: The skill involves recording observations or measurements properly using tables, charts, graphs, labeled drawing, formulae and other form for easy future reference.

Q8: Which skill involves using our five sense organ?

Ans: Observing and caring skill is involved using our five sense organ.

LONG QUESTIONED ANSWERS

Q1: Describe the branches of science.

Ans: BRANCHES OF SCIENCE:

Science is divided into many branches. The main branches are given below.

BIOLOGY:

The study of life and living things is called Biology.

CHEMISTRY:

The study of formation and properties of matter is called chemistry.

PHYSICS:

The study of matter, energy, their relationship and natural forces is called physics.

ASTRONOMY:

The study of the sun, the moon, the stars and other heavenly bodies is called astronomy.

GEOLOGY:

The study of structure of the earth is called geology.

Q2: Describe the scope of science.

Ans: SCOPE OF SCIENCE:

(1) Science helps us to understand the world around us, solve problems and to train our minds to think logically and systematically.

(2) The study of science is not just for scientist. An artist

needs to know science for mixing colours and painting materials. Photographer needs to know science to understand the nature of light so as to take good photograph.

(3) We can use science to reduce the damages caused by natural disasters such as earthquake and hurricanes.

(4) With the rapid progress in science, our standard of living has improved greatly.

Q3: Define scientific method with the help of scientific skills in detail.

Ans: ☆ SCIENTIFIC METHOD:

The method by which scientific problems are solved easily is called scientific problem.

☆ SCIENTIFIC SKILLS:

In carrying out experiments, scientific skills are required. These are:

☆ Observing carefully and measuring accurately:

This skill involves using our five sense organs (senser) sight, smell, hearing, taste and touch to gather all information about a topic under study. Simply this skill is called observation.

☆ Communicating Effectively:

This skill involves recording observations or measurements properly using tables, charts, graphs labeled drawing, formulae and other forms for easy future reference.

☆ Making inference and developing a hypothesis:

An inference is a statement one arrives at by reasoning based on observation or measurement. The skill of making an inference involves thinking and discussing with others to reach the possible explanation for an observation. The limits within which the inference scientists usually come up with a hypothesis which is suggested explanation that can be tested experimentally.

☆ Planning or designing experiments to test the hypothesis:

This skill involves deciding what apparatus to use, how to put them together, what observations or measurements to make and how to do a fair test on the

validity of the hypothesis.

In addition to the scientific skills scientists need to adopt positive attitudes such as curiosity, humility, impartiality, open mindedness etc.

Q4: Describe the safety rules. Also explain the necessary of safety rules in the laboratory.

Ans: Safety Rules in the Laboratory:

Scientific experiments are usually performed in the laboratory. Doing experiments in the science laboratory may be fun,"but it can be dangerous if we are careful. For our own safety as well as the safety of others in the laboratory, we must follow laboratory safety rules.

(1) Do not enter the laboratory without the teacher's permission.

(2) Open all doors and windows unless instructed by your teacher.

(3) Read the instructions first and understand them before starting your experiment. If in doubt, always ask your teacher.

(4) Handle all apparatus and chemicals carefully and correctly.

(5) Do not pour any chemicals back into its container to avoid harm.

(6) Do not eat, drink or play in the laboratory.

(7) Do not play with objects and other fittings in the laboratory.

(8) Place the apparatus to their proper places after cleaning.

(9) Do not reuse any apparatus or chemical from the laboratory.

(10) Wash your hands after all laboratory-

CHAPTER TWO

BIOLOGY: THE STUDY OF LIFE AND ITS ASPECTS

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. _____ the scientific study of living things.
(Biology, Pharmocology, Virology)
02. The word Biology has been derived from the two words Bios and logos.
(Arabic, Greek, Latin)
03. The study of life is called_____
(Bioterminology, Biology, Histology)
04. The Greek word Bios means_____
(Life, Death, Pain)
05. The Greek word logos means_____
(Study, Safety, Tasty)
06. It deals with the study of plants.
(Botany, Parasite, Morphology)
07. It deals with the study of animals.
(Zoogeography, Zoo-history, Zoology)
08. _____is the basic unit of life.
(cell, tissue, organ)
09. Cell was first discovered in_____.
(1663,1664,1665)
10. Cell was discovered by_____.
(Aristotle, Rober Hork, Al-Farabi)
11. A_____is absent in animal cell.
(cell wall, cell membrane, nucleus)
12. The_____is a thin layer that surrounds the cell.
(cell wall, cell membrane, nucleus)
13. Nucleus was discovered by_____.
(Joseph Lister, Charles Darwin, Robert Brown)
14. Nucleus was discovered in _____.
(1830,1831,1832)
15. _____are tiny parts of the cell.
(organelles, vacuoles, cytoplasm)

ANSWER KEY

01	Biology	02	Greek
03	Biology	04	Life
05	Study	06	Botany
07	Zoology	08	Cell
09	1665	10	Robert Hook
11	Cell-membrane	12	Cell-membrane
13	Rober Brown	14	1831
15	Organelles		

SHORT ANSWERS AND QUESTIONS

Q1: What is Biology?

Ans: BIOLOGY: Biology is the scientific study of living things. Basically the word biology has been derived from two Greek words bios means life and logos means study. Thus the study of life is called Biology.

Q2: What is Botany?

Ans: BOTANY: It is the branch of Biology. It deals with the study of plants.

Q3: What is Zoology?

Ans: ZOOLOGY: It is the branch of Biology. It deals with the study of animals.

Q4: What is Cell?

Ans: CELL: Cell is the basic unit of life. Just as a building is made up of stones or bricks, all living organisms are made up of cells.

Q5: Name the main parts of animal's cell.

Ans: Main Parts of animal cell:

An animal's cell has simple structure. An animal cell consists of three parts, namely.

☆ Cell membrane ☆ Cytoplasm
☆ Nucleus

Q6: What are organelles?

Ans: ORGANELLES:

Organelles are tiny parts of a cell.

Q7: Name the major organelles of cell.

Ans: Major organelles of a cell.

☆ Mitochondria ☆ Golgi bodies
☆ Endoplasm reticulum ☆ Ribosomes

8: Define the discovery of Cell.

Ans: Discovery of Cell:

A great scientist Robert Hook who discovered cells for the first time in 1665. He was studying a thin slice of cork (a dead part of plants) under a microscope and saw box like structure which he named cells/ Define the discovery of nucleus.

Q9: **Define the discovery of nucleus.**

Ans: Discovery of Nucleus:

It was discovered by Robert Brown in 1931. It may be spherical or irregular in shape.

Q10: What are vacuoles?

Ans: VACUOLES:

In the cytoplasm of a plant cell there are sac-like structure, known as vacuoles. The vacuoles are filled with fluid known as cell sap. The fluid consists of huge percentage of water with sugar and some mineral salts dissolved in it.

Q11: What is cytology?

Ans: It is the branch of biology. It deals with the study of cell.

LONG QUESTIONS AND ANSWER

Q1: Define the impact of Biological study on human life.

Ans: **Impact of Biological Study on Human Life:**

The study of biology is specially important as most of the routine matters of our life. It revolves around basic biological principles. New discoveries in biology revolutionized medicine, dentistry, reterinarymedicine, public health, animal husbandry, Agriculture, pest control and other related field.

Q2: Describe the origin of life.

Ans: ORIGIN OF LIFE:

By the origin of life, we mean the formation of first living thing on this earth. What was this thing like and how did it come into existence? In the Holy Quran, there are many verses which tell us about the origin of

life. The most important fact in the teachings of Quran is that Allah is the ultimate creator of everything whether plants, animals, human beings or non living things.

In surah zamar, verse no: 6 Quran says that: "Allah is the creator of all things, and He is the guardian of overall things.

In surah Ambia-verse no: 30 Quran says that: "We made every living thing from water".

We were never aware of many living things earlier as we know today. The Bacteria, Algae, Fungi, different kinds of plants, all animals and human are all living things.

According to Quranic verses Allah has created all the diverse living things from water.

Q3: Write a note on shape and size of cell.

Ans: Shape and Size of Cells:

The are different shapes and sizes of all.

(1) Some of them are rectangular in shape and others are rounds, oval or many sided.

(2) Some of them are elongated like needle or thin thread.

(3) Most cells in living organisms are so small that they can not be seen by the naked eye.

(4) Most cells can be seen with the help of microscope.

Q4: Describe the structure of animal cell.

Ans: Structure of Animal Cell:

An animal cell has simple structure. An animal cell consists of three parts, namely:

☆ Cell membrane ☆ Cytoplam ☆ Nucleus

☆ Cell membrane:

The cell membrane is a thin layer that surrounds the cell. It separates a cell from its surroundings. It allows water, minerals and many essential substances to pass thought it.

☆ Cytoplam:

Cells contain a jelly like substance known as cytoplasm. Many reactions also take place in the cytoplasm. There are different types of organelles, which perform different function.

☆ Nucleus:

It was discovered by Robert Brown in 1831. It may be spherical or irregular in shape. In animal cell, it is usually present in the centre. It is filled with a gel like substance called nucleoplasm. It controls the all functions and activities of cell. It is also controlling centre of the cell.

Q5: Describe the structure of plant cell.

Ans: Structure of Plant Cell:

In general plant cells are larger than animal cells. A plant cell has cell membrane, cytoplasm and nucleus just like an animal cell. However plant cell also has some other structures such as cell wall, chloroplast and a large vacuole. These structures are:

☆ CELL WALL:

In a plant cell there is a cell wall.The cell wall is made up of cellulose. It encloses the whole plant cell. It protects cell. In the cell wall, the cellulose deposits in the form of fibres. These fibres are kept in their position by a cementing material called calcium pectate (pectine)

☆ CHLOROPLAST:

The cytoplasm of plant cell contains tiny disk like green organelle known as chloropiasts. They contain chlorophyll. They give plants, their green colour. Chloroplasts are necessary for the manufacture of carbohydrates (the food of a plant) by absorbing sunlight. They help in the process of photosynthesis.

☆ VACUOLE:

In the cytoplasm of a plant cell there are sac-like structure, known as vacuoles. The vacuoles are filled with fluid known as cell sap. The fluid consists of a huge percentage of water with sugar and some mineral salts dissolved in it.

CHAPTER THREE

HUMAN BODY AND ITS SYSTEMS

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. Our_____is much more wonderful machine than any other machine.
(Tissue, Body)
02. Each_____of body has a special job to do.
(Part, Finger, Not)
03. Many_____make a system.
(Organs, Tissues, Cells)
04. The_____take part in the work to be done by the system.
(organs, Tissues, Cells)-
05. The heart, arteries and veins together form a system.
(Skeletal, Circulatory, Nervous)
06. The human body consists of many_____.
(system, organization, ventilation)
07. The _____ system gives form, shape,and support to the body.
(Digestive, Muscular, Skeletal)
08. The_____system is made up of muscles.
(Digestive, Muscular, Skeletal),
09. There are about_____different muscles in our body.
(600, 700, 800)
10. The_____system helps us to breathe.
(Skeletal, Muscular, Respiratory)
11. _____always flows in the blood vessels and reaches in all parts of the body.
(blood, urine, sweat)
12. The _____ pumps the blood in our body. (Lungs, Heart, Kidney)
13. A human being passes out about_____liters of urine everyday.

(1.5 to 2.5, 2 to 4, 3 to 6)

14. _____is found in the skull.
(Brain, Nerve, Spinal cord)

15. The _____ carry messages from all parts of the body to brain.
(Nerves, Nucleus, Tissues).

ANSWER KEY			
01	Body	02	Part
03	Organs	04	Organ
05	Circulatory	06	System
07	Skeletal	08	Muscular,
09	600	10	Respiratory
11	Blood	12	Heart
13	1.5 to 2. 5	14	Brain
15	Nerves		

SHORT QUESTIONS AND ANSWER

Q1: What are organs?

Ans: ORGANS: The body parts are called organs. Many organs make a system. The organs take part in the work to be done by the system.

Q2: What is Skeleton?

Ans: SKELETON:
Our body is supported by a general frame of bones called skeleton.

Q3: How many bones are found in our body?

Ans: 206 bones are found in our body.

Q4: What is muscle? Name kinds of muscle.

Ans: MUSCLE:
The soft fleshy portion of our body is called muscle.

KINDS OF MUSCLES:
There are two kinds of muscles in our body. Which are under as:
☆ Voluntary Muscles. Involuntary Muscles.

Q.5: How many muscles are found in our body?

Ans: The are about 600 different muscles in our body.

Q.6: What is tendon?

Ans: TENDON:

The muscles are attached to bones with the help of tough material called tendon.

Q7: What is digestion?

Ans: Digestion:
The process by which larger molecules of food are broken down into smaller molecules is called digestion.

Q8: What is respiration?

Ans: Respiration:
Oxygen from the air is taken into the lungs and carbon dioxide is given out through nose is called respiration.

Q9: How many chambers are found in the heart? Name them.

Ans: There are four chambers of heart, namely:
(1) Two upper chambers are called auricles.
(2) Two lower chambers are called ventricles.

Q10: What are sense organs?

Ans: SENSE ORGANS:
We are able to know about the world with the help of our eyes, nose, tongue and skin. These organs are called sense organs. The brain receives many kinds of messages through these organs.

LONG ANSWERS AND QUESTIONS

Q1: What is skeletal system? Also write the kinds of bones with their names.

Ans: **Skeletal System:** Our body is supported by a general frame called skeleton. This general framework is also called skeletal system. The skeletal system gives form, shape and support to the body. It also protects some organs inside our body.

KINDS OF BONES:
There are about 206 bones of different shapes and size in our body which are under as:
☆ Long bones ☆ Flat bones
☆ Small bones ☆ Irregular bones

Q2: What is blood circulatory system? Also write and define its main organs.

Ans: BLOOD CIRCULATORY SYSTEM:

This system is made up of the heart and blood vessels. Blood always flows in the blood vessels and reaches in all parts of our body. Blood supplies oxygen and food to all the parts of the body. The circums of blood helps to maintain a uniform body temperature.

☆ The Blood Circulatory Organs:

The blood circulatory system consists of the following organs i.e. Heart, Artertries veins and capillaries.

(1) The heart:

The heart pumps the blood in our body all the time. The human heart consists of four chambers. Two upper chambers are called auricles. Two lower chambers are called ventricles. In a healthy adult human, the heart pumps 60 to 80 times every minute.

(2) ARTERIES:

Those blood vessels which carry blood from the heart to all parts of the body are called Arteries.

(3) VEINS:

Those blood vessels which carry blood from the all parts of the body to the heart are called veins.

(4) CAPILLARIES:

Those blood vessels which pick up carbon dioxide and all the waste from the body cells and carry them to the excretory organs are called capillaries.

Q3: What is excretory system? Also write and define its main organs.

Ans: EXCRETORY SYSTEM:

The excretory system removes most of the waste material from the body. Such wastes are sweat are excreted from the body. A man passes out about 1.5 to 2.5 litres of urine everyday.

THE EXCRETORY ORGANS:

The excretory system consists of the following organs: Kidney, Urinary tube and Urinary bladder.

(1) KIDNEY:

There are two bean shaped kidneys in human body. Kidneys remove waste material from the

blood in the form of urine. They can be called filters of the body.

(2) URINARY TUBE:

It is long tube which arises from each kidney and open into the urinary bladder. It takes urine from the kidney and to the urinary bladder.

(3) URINARY BLADDER:

It is a sac like structure and store urine for sometime.

Q4: What is nervous system? Also write and define its main organs.

Ans: NERVOUS SYSTEM:

The nervous system allows us to be aware of our environment without it, we cannot see, hear, feel, smell or think. It controls what our does.

THE NERVOUS ORGANS:

It consists of brain, spinal cord and nerves.

(1) BRAIN:

It is found in skull. It receives message from the sense organ and the other parts of our body. It sends out order to the different parts and make them work. The brain helps us to think, learn and remember.

(2) SPINAL CORD:

It is enclosed in the vertebral column. A big nerve is connected to the brain. This is called the spinal cord. Messages travel from the brain, down the spinal cord to all parts of our body. The spinal cord also controls certain activities such as the jerking away of your hand when you happen to touch a hot object.

(3) NERVE

The nerves connect the brain and the spinal cord to different parts of the body. The nerves carry messages from all parts of the body to the brain.

Q5: Define the five sense organs in detail.

Ans: **SENSE ORGANS:** We are able to know about the world with the help of our eyes, ears, nose, tongue and skin. These organs are called sense

organs. The brain receives many kinds of messages through these organs.

EYES:

Eyes help us to see things. Pictures of things seen by are formed inside our eyes. A nerve carries the message about these to the brain. The brain helps us to know what they are.

EYES:

Ears help us to hear sound. Messages about the different kinds of sound reach the brain through the ears and the nerves connecting them to the brain.

NOSE:

Different things have different kinds of smell, our nose helps us to smell different things. 'ONGUE?

TONGUE:

Our tongue helps us to taste the things we eat. The message out the taste reaches the brain through the nerve connecting the tongue to the brain. The brain tells us about the taste of that thing.

SKIN:

Our skin helps us to feel heat and cold,Messages ate carried through the nerves from the skin at the tips of our fingers to the brain. The brain also tells us about the surfaces. So we are able to say if a surface is rough or smooth. The skin also helps us to feel pressure and pain.

CHAPTER FOUR

THE ENVIRONMENT

(ADAPTIVE FEATURES OF ANIMALS AND PLANTS)

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. Everything around us form our_____.
(System, Environment, Surrounding)
02. _____is a scientific word for surrounding.
(Industry, System, Environment)
03. Air, water, temperature and light are _____part of environment.
(Biotic, Abiotic, Genetic)
04. The people in our family, our freinds, our pets and even bacteria are called _____factors.
(Biotic, Abiotic, Taxonomic).
05. Living things together within abiotic parts of environment, form an_____.
(Open system, Close system, Ecosystem)
06. The term ecosystem was first used by _ ___the british ecologist.
(Sir George Tanley, Rober Brown, Charles Darwin)
07. Adaption of both plants and animals are related to _____.
(Environment, Habitat, Shape)
08. Which one of the following adaption is related to cold places?
(Body coat of hair wool, Body coat of Spines, Body coat on body)
09. Porcupine protects itself from its enemies by an adaption called.
(Spine, Sting, Wing)
10. Chameleon protects itself from its enemies by its _____.
(Shape, Scales, Colour)
11. All of the following adaption, are of animals living in water except.
(Webbler feet, Legs, Fins.)

12. Which one of the following is behavioured adaption?
(Burrowing, Protective Colaration, Waxy Coat)
13. _____is desert plant.
(Neem, Cactus, Mango)
14. Protective coloration is the adaptive feature of _____.
(Wasp, Owl, Chameleon)
15. Beside providing protection against enemies stings of some animals are also use to _____.
(Kill the prey, Swim, to eat the prey)

ANSWER KEY			
01	Environment	02	Environment
03	Abiotic	04	Biotic
05	Ecosytem	06	Sir George Tanley
07	Environment	08	Body coat of hair wool
09	Spines	10	Chameleon
11	Legs	12	Burrowing
13	Cactus	14	Chameleon
15	Kill the prey		

SHORT ANSWER QUESTIONS

Q1: Define environment and ecosystem.

Ans: Environment.

Everything around us form our environment. Environment is a scientific word for surrounding.

☆ **Ecosystem:** Living things together with the abiotic parts of thier environment, form ecosystm. Ecosystem was first used in 1935 by british ecologist sir George Tansley.

Q2: Define biotic and abiotic terms?

Ans: Biotic: Animals and plants are called the living parts of environment. These are also called biotic factor of environment.

☆ **Abiotic:** Air, water, heat and light are the non-living part of environment. These are also called abiotic factor of environment.

Q.3 What is adaption?

Ans: Adaption: The features or the change in behaviour developed by an animal or plant to live successfully in a particulars habitat is called adaption.

Adaptions of both animals and plants are related to their environment.

Q4: What function does a body coat of hair or wool perform for the animals?

Ans: Some animals such as sheep have their skin covered with hair (wool). The wool acts like a cusion and provide protection to animals against injury. It also protects the sheep against cold weather and keeps it warm.

Q5: What is the function of body coat of spines?

Ans: animals like the porcupine the body is covered with spines."This hfeTps them in defence against enemies. Adaptive feature like hair (wool) and spines protect these animals against cold and their enemies.

Q6: Give one example each of the followings.

(a) Animals with body coat of scales
(b) Animals with body coat of shell

Ans: (a) Fish (b) Tortoise

Q7: Write two functions of stings?

Ans: Stings protect the animals by injecting toxic fluid into the enemy. Stings are also used to kill the prey for food.

Q8: Give two examples of animals which protect them from enemies by protective coloration.

Ans: Frogs and chameleon:

LONG ANSWER QUESTIONS

Q1: Write a note on behavioural adaptions of animals and plants.

Ans: Behavioural adaptions of animals and plants:

Animals and plants have developed and adopted certain features because of which they live very succesfully in their habitats. These features protect them against thier enemies in one way or another and also them to face difficult conditions of their environment. Do you know what these conditions of their environment? do you know

what these difficult conditions may be? The difficult conditions may be severe cold, availability of very less water, abundance of water etc. By adaption such features they can survive well.

Adaptions of both animals and plants are related to their environment. Some as of the animals have devleloped, some have particular enternal features while others have developed certain changes in their behaviour.

Q2: How sharp claws and teeth are helpful for some animals? Discuss.

Ans: Some animals need sharp claws and teeth for their protection against their enemies. These animals also use these features for catching and killing their prey to get food. These adaptive features are present in animals like cat, dog, lion, tiger, bear and eagles etc.

Q3: Write a note on the body coat of feathers. comment.

Ans: Birds have a body coat of feathers protect their bodies against injuries. These also keep the birds warm and help them to fly. small, soft and cotton feathers over the skin of chicks keep them warm and protect them from cold.

Q4: Write a note on the body coat of scales. Discuss.

Ans: Many animals have scales on their body. In most fishes, the scales are bony and overlap one another their body smooth shape, protect the skin from injury. They help the fish to move quickly through water. They type of body coat is very suitable in aquatic environment.

Q5: Write a note on the adaptive features of plants. comments.

Ans: Different plants grow in different places. Their body structures are also different. Their body structures are according to the environment they live in. For example cactus which is desert plant, can store water in its swollen stem.

CHAPTER FIVE

ENVIRONMENT ADAPTIVE FEATURES OF ANIMALS

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. _____is the study of composition, structure and properties of matter.
(Chemicology, Chemistry, Chemical behaviour)

02. Chemistry as a modern science began a few_____ years ago.
(Hundreds, Tents, Fifties)

03. One of the most important of these theories was _____.
(Electronic Theory,Atomic theory, Genetic Theory)

04. _____is defined as anything that exists, has mass and occupies space.
(Matter, Atom, Molecule)

05. _____have a fixed shape and volume.
(Solids, Liquids, Gases)

06. In_____the molecules are very closed packed.
(Solids, Liquids, Gases)

07. The_____have definite volume but they don't have definite shape.
(Solids, Liquids, Gases)

08. The _____ have neither definite volume nor definite shape.
(Solids, Liquids, Gases)

09. There are_____kinds of tiny particles.
(One, Two, Three)

10. The smallest particles are called_____.
(Ions, Atoms, Molecules)

11. There are_____fundamental particles of atom.
(Two, Three, Four)

12. An_____is negatively charged particle.
(Electron, Proton, Neutron)

13. A_____is neutral particle.
(Proton, Radical, Neutron)

14. A_____is neutral particle.

(Proton, Photon, Neutron)

15. Everything in the universe undergoes_____.
(Change, Reverse, None of these)

ANSWER KEY			
01	Chemistry	02	Hundreds
03	Atomic theory	04	Matter
05	Solid	06	Solid
07	Liquid	08	Gas
09	Two	10	Atoms
11	Three	12	Electron
13	Proton	14	Neutron
15	Change		

SHORT QUESTIONS AND ANSWERS

Q1: What is chemistry?

Ans: Chemistry:

Chemistry is the study of the composition structure and properties of matter.

Q2: What is matter?

Ans: Matter:

Matter is defined as anything that exists and has mass and occupies space, stone, wood, building, bus, rivers, water, air, tree, smoke, milk, kerosene are all matters.

Q3: Name states of matter.

Ans: Matter exists in three common states. They are solids, liquids and gases.

Q4: What is atom?

Ans: Atom:

The smallest particles are called atoms. John Dalton, an english school teacher and chemist suggested that element itslef is made up of smalller particles called atoms.

Q5: Name fundamental particles of atom?

Ans: Fundamental particles of atom:

Electron, proton and neutron are fundamental particles of atom.

Q6: Define molecules.

Ans: Molecules:

The group of atoms is called atom. In simple words we can say that the larger molecules are groups of atoms joined together.

Q7: What is physical change?

Ans: Physical Change:

A physical change is a temporary change during which no new substance is formed. It is reversible and the consumption of the substance remains un change.

Q8: What is chemical change?

Ans: Chemical Change;

A chemical change is a permanent change in which an entirely new substance is formed with different properties. This change is usually irrevessibie

LONG ANSWER QUESTIONS

Q1: What is the role of chemistry in our daily life?

Ans: Role of chemistry in our daily life:

Chemistry is playing an important role in our daily life. For example a painted wall, a photograph hanging on the wall, our clothes are made of cotton or synthetic fibre,soap we use in washing etc. In simple words we can say that the cement, cosmetics, detergents, soaps, paints, varnish, acids and bases, alloys of metal, explosives, fertilizer, glass and medicines are majors gifts of chemistry in our daily life.

Q2: Define history of chemistry.

Ans: History of Chemistry:

The earliest practical knowledge of chemistry was concerned with pottery makinig, glass making, metallugy and dyeing; these arts and crafts were developed with considerable skill, but with no understanding of the principles involved as early as 3500 B.C in egypt and mesopotamia. Later the Greek, Roman, Muslim and modern scientists conuritributed a lot in the development of chemistry.

Q3: Define solid, liquid and gas.

Ans: Solid:

Stones, wood, rubber, iron and salt are solids. Solids have a fixed shape and volume. In solids the molecules are very closely packed. That's why

they have definite shape.

☆ **Liquid:**

Milk, water, cooking oil and kerosene are liquids. The liquids have definite volume but they don't have definite shape. They take the shape of vessel in which they are kept. The molecules of the liquid are apart. They are free to make.

☆ **Gases:**

Oxygen, Hydrogen, Nitrogen, cooking gas (Marsh Gas) and smoke are gases. The gases have neither definite volume nor shape. The molecule of the gases are far apart. They move about very freely.

Q4: Write some properties of matter.

Ans: Properties of matter:

All matters do not alike. They are different in their size, weight, taste, colour, smell and so on. The properties of stones are different from the properties of water. So different kinds of matter have different properties.

☆ **Some are soft but some are hard:**

Take some cotton, silk, flower, a stone, a piece of wood, glass, an ice cube and an iron ball. Feel them in your hands. Can you tell the difference? The cotton, silk, flower are soft to touch and the others are hard to touch.

☆ **Some allow light to pass through and some do not:**

Look through a piece of glass and a piece of cardboard. Now focus a torch light on them. Can you tell the difference? The glass piece allowed the light to pass through and you were able to see through it, where as the card board did not.

☆ **Some break easily but some do not:**

Take a glass bottle, a chalk, a sugar candy, a mud pot, a piece of wood, an iron rod, rubber and a cardboard. Drop them one by one on the ground.

Q5: Define electron, proton and neutron.

Ans: Electron:

An electron is a negatively charged particle. It revoles around the necleus in specific regions

called orbit.

☆ **Proton:**

A proton is positively charged particle. It is found in the necleus of a atom.

☆ **Neutron:**

It is a neutral particle. It is also found in the nucleus of the atom. It has no charge. It is equal in mass to to a proton.

Q6: Define reversible and irrevesible changes?

Ans: Reversible Change:

If a change can be reversed it is called reversible change. In this change, product can be changed into ice on cooling. Thus this change is reversible change.

☆ **Irreversible change:**

If a change cannot be reversed it is called an irreversible change. In this change, product cannot from original substances. Burning of coal, grinding maize grain into flour, falling of leaves from the tree are few examples of irreversible changes.

Q7: Whay do you mean by natural and man made changes?

Ans: Natural Changes:

The changes which are brought about by nature itself are called natural or universal change. These changes are out of control by man. Changes of season, tides in the sea, landslides are few examples of natural changes.

☆ **Man made changes:**

The changes which are brought about by man are called man made changes. These changes are the under the control of man. Formation of curd, burning of fuels, switching on the electric fan are some examples of man made changes.

CHAPTER SIX

CHEMISTRY OF AIR

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. Air is_____of the gases.
(Elements, Mixture, Compound)
02. Nitrogen is present in air about_____percent.
(68%, 78%, 87%)
03. Oxygen is present in air about_____percent.
(21%, 31%, 41%)
04. Carbon dioxide is present in air about _____ percent.
(0.003%, 000.3%, 00003%)
05. Argon is present in air about_____percent.
(0.005%, 00.5%, 00.05%)
06. The symbol of nitrogen is_____.
(N, Ni, Na)
07. The symbol of oxygen is_____.
(Ox, On, O)
08. The formula of carbondioxide is_____.
(C202, C02, C20)
09. The formula of potassium nitrate is_____.
(PKNo3, KNo3, PNo3)
10. Oxygen is about_____of air by volumes.
(one third, one fourth, one fifth)
11. It does not burn itself but substances are burnt by _____.
(Nitrogen, Oxygen, Argon)
12. Plants use_____for making proteins.
(Nitrogen, oxygen, Argon)
13. It is soluble in water, so plants use it for photosynthesis.
(carbon dioxide,Hydrocarbon, Hydrogen sulphate)
14. It is used in soft drinks such as 7-up, Pepsi, Mirinda etc).
(carbondioxide, Hydrocarbon, Hydrogen sulphide)
15. The pressure exerted by air is called_____ «
(Air pressure, Air molecules, Air contraction)

ANSWER KEY

01	Mixture	02	78%
03	21%	04	0.003%
05	0.005%	06	N
07	O	08	Co2
09	KNo3	10	One third
11	Oxygen	12	Nitrogen
13	carbondioxide	14	Carbondioxide
15	Air Pressure		

SHORT QUESTIONS AND ANSWERS

Q1: What is air?

Ans: AIR:

Air is mixture of the gases. Such as nitrogen, oxygen, carbondioxide a goses. It contains other gases also but they are in very small amount.

Q2: Write the quantity of oxygen and nitrogen by percentage in air.

Ans: Oxygen is present in air about 21% Nitrogen is present in air about 78%.

Q3: Write the symbols of these gases.

Nitrogen, Oxygen and Argon.

Ans:

GASES	SYMBOL
NITROGEN	N
OXYGEN	0
ARGON	Ar

Q4: Write the formula of these compounds.

Carbon monoxide, Potassium Nitrate and Sodium Nitrate.

Ans:

COMPOUNDS	FORMULA
Carbon monoxide	CO
Potassium Nitrate	KNo3
Sodium Nitrate	NaNo3

Q5: What is air pressure?

Ans: AIR PRESSURE:

The pressure exerted by the air is called air pressure or atmospheric pressure.

Q6: Is air matter? comment.

Ans: AIR IS MATTER:

Air is matter, like all other material things because it occupies space and has weight.

Q7: Give two uses of Nitrogen and oxygen.

Ans: TWO USES OF NITROGEN:

(1) It is used to prevent fire.

(2) It is used for making fertilizers.

TWO USES OF OXYGEN

(1) It is" used in hospitals for artificial breathing.

(2) Mountain climbers take cylinder for breathing at high altitudes.

LONG QUESTIONS AND ANSWERS

Q1: What is air? Define its composition.

Ans: AIR:

Air is mixture of the gases such as nitrogen, oxygen, carbondioxide and rare gas such as argon. It contain other gases also but they are in very small amount.

COMPOSITION OF AIR:

Air mixture is composed of various gases. Nitrogen, oxygen take great part in the composition of air.

Nitrogen (N)	————>	78%
Oxygen (O)	————>	21%
Carbondioxide (CO_2)	——>	00.03%
Argon (Ar)	————>	00.05%
Other gases	————>	00.02%

A part from these gases air also contains water vapours and dust particles.

Q2: Write uses of Nitrogen.

Ans: USES OF NITROGEN:

01. Nitrogen does not burn but it is used to prevent fire.
02. The space above the oil or petrol in a petrol tanker is filled with Nitrogen to prevent fire.
03. In aircrafts, before a flight, the re-filling lines are washed with nitrogen to prevent fire.
04. It is used for making fertilizers.
05. Plants use Nitrogen for making proteins.

Q3: Write the uses of Oxygen?

Ans: USES OF OXYGEN:

01. Oxygen does not burn itself but substances are burnt by oxygen. This property is used to identify oxygen gas.
02. In human body 70% oxygen is present by weight. Living things use oxygen for breathing. In one hour human beings consume about 1.5 to 2 liters oxygen.
03. Fish and other aquatic animals extract the oxygen dissolved in water through their gills.
04. Oxygen is used in hospitals for artificial breathing.
05. It is used as a fuel in rockets. Spaceships and aircrafts flying at high altitude.
06. Mountain climbers take oxygen cylinder for breathing at high altitude.
07. Sea divers also take oxygen cylinder when they work under water.
08. It has also many in industries.

Q4: Write the uses of Carbondioxide.

Ans: USES OF CARBONDIOXIDE:

01. Take a lighted candle and put it a jar full of carbondioxide. You will see that the candle is extinguished at once. This shows that carbondioxide does not support in combustion. Due to this property it is used in fire extinguishers.
02. It is soluble in water, so aquatic plants use it for photosynthesis.
03. Carbondioxide becomes solid when it is cooled at a temperature of -78°c. This solid carbondioxide is called dry ice. Which is used in cold storage.
04. At high pressure it is easily dissolved in water and form carbonic acid or soda water, which we use in soft drinks such as 7up, pepsi, mirinda etc.
05. Green plants absorb this gas from air and prepare their food during photosynthesis.

Q5: Prove by experiments that air occupies space and it has weight.

Ans: (1) AIR OCCUPIES SPACE:

EXPERIMENT:

☆ Take a balloon and blow air into it by your mouth. The balloon increases in size.

☆ The size of the balloon increases further if more air is blown into it. This experiment Shows that air occupies space.

(2) AIR HAS WEIGHT:

EXPERIMENT:

☆ Take a straight and tow a thread in the middle of it. Then take a balloon with air blowing into it and tie it with the help of a thread at one end of the stick.

☆ Take another empty balloon and tie it at other end of the stick. Now lift the stick in the middle. You will observe that the end of the stick having the air shows that air has weight.

CHAPTER SEVEN

CHEMISTRY OF WATER

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. _____ is the most abundant substance available in the surface of the earth.
(water, milk, salt)

02. The common state of water is _____.
(solid, liquid, gas)

03. In _____ Henry Carendish described that water is a compound of hydrogen and oxygen.
(1781, 1791, 1801)

04. In_____lavoiser described that water is consisted of two atoms of hydrogen and one atom of oxygen.
(1683,1783,1883)

05. The formula of water is_____.
(H_2O, H_2O_2, H.O)

06. Water is a natural_____.
(Solute, Solvent, Crystal)

07. Photo means light while synthesis means_____.
(cancel, To make, To reduce)

08. All the aquatic animals take in_____.
(oxygen, Nitrogen, Carbon)

09. Water which produces lather with soap is known as_____.
(lime water, soft water, hard water)

10. Water which produces curd with soap is known as_____
(lime water, soft water, hard water)

11. The cyclic process in which evaporation and condensation dissolved in occur side by side is called _____
(Water cycle, Oxygen Cycle, Nitrogen Cycle)

12. As water vapour is light, it begins to rise up in the _____
(Temperature, Pressure, Atmosphere)

13. Hard water contains soluble compounds of_____
(Calcium and Magnesium,Zinc and Sulphur, Carbon and Hydrogen)

14. A small amount of _____ gas is passed through the filtered water to kill the germs.
(flourine, chlorine, hydrogen)

15. _____ destroy bacteria and it makes water safe for drinking.
(Boiling, Melting, Freezing)

ANSWER KEY			
01	Water	02	Liquid
03	1781	04	1783
05	H_2O	06	Solvent
07	to make	08	Oxygen
09	Soft Water	10	Hard Water
11	Water Cycle	12	Atmosphere
13	Calcium and Magnesium	14	Chlorine
15	Boiling		

SHORT ANSWER QUESTIONS

Q1: What is water?

Ans: WATER:

Water is the most abundant substance available on the surface of the earth.

About three fourth of the earth's surface is made up of water life on the earth is impossible without water.

Q2: Write the concept of Henry cavendish about water.

Ans: In 1781, Henry cavendish described that water is a compound of hydrogen and oxygen.

Q3: Write the concept of Lavoiser about water.

Ans: In 1783, Lavoiser described that water is consisted of two atoms of hydrogen and one atom of oxygen.

Q4: Write the four uses of water.

Ans: FOUR USES OF WATER:

01. Water is used for household purposes such as drinking, washing, cooking and cleaning.
02. In agriculture water is used for irrigating the fields.
03. It is used to generate electricity (hydroelectricity) in dam.
04. In is used in industries to carry out various processes.

Q5: Name Sources of water.

Ans: SOURCES OF WATER:

Lakes, Rivers, Sea, Oceans, Wells.

Q6: Define soft water.

Ans: SOFT WATER:

Soft water is free of the soluble salts of calcium and magnesium. So it gives good lather washing is properly done in this type of water. The formula of soft water is H_2O.

Q7: Define hard water.

Ans: HARD WATER:

It contains soluble compounds of calcium and magnesium. The formula of hard water is D_2O.

Q8: What is boiling?

Ans: BOILING:

☆ When hard water is boiled the salts of calcium and magnesium are decomposed and settle down insoluble salts.

☆ Boiling destroy bacteria and it makes safe for drinking.

LONG ANSWER QUESTIONS

Q1: What is importance of water for animals and plants?

Ans: IMPORTANCE OF WATER FOR PLANTS:

01. Water enables seeds to germinate into seedlings.
02. Water is required by plants along with carbon dioxide to manufacture food by the process of photosynthesis (Photo meaning light, synthesis meaning to make).
03. Water is a habitat for aquatic plants.
04. Water is essential for growth of plants.
05. Water also helps in the transportation of minerals from soil to different part of the plants.

IMPORTANCE OF WATER FOR ANIMALS:

01. Animals need water for drinking and bathing.
02. All the aquatic animals take in oxygen dissolved in water.

Q2: Write properties of soft water and hard water.

Ans: PROPERTIES OF SOFT WATER:

Soft water is free of the soluble salts of calcium

and magnesium. So it gives good lather washing is property done in this type of water.

PROPERTIES OF HARD WATER:

It contains soluble compounds of calcium and magnesium. The calcium and magnesium combine with soap and form curd instead of lather and the washing can not be done properly and a lot of soap is washed. Hard water is not fit for drinking because it causes stomach disorder.

Q3: Name the sources of water. Also describe them.

Ans: SOURCES OF WATER:

The water is found in nature is called natural water. Water from rain, lakes, river, sea and well is called natural water.

RAIN:

Rain is the purest form of natural water. The initial showers contain gases and some suspended particles. But, the subsequent showers and free from these impurities. The rain water gets collected in lakes, rivers etc.

LAKES:

The rain water collects in the lakes. They are some natural lakes in our country. However, some artificial lakes have also been built to meet the needs for water at some places.

RIVERS:

Rivers are fed by rains and melting snow from high mountain while some rivers e.g Ganga and Brahmputra have flowing water all the year round.

SEAS:

These are large bodies of water containing large amount of dissolved impurities (about 3.5% dissolved saltsd).

OCEANS:

These are very large bodies of water. Ocean water is too saline. Oceans such as Arctic and Antarctic have after in the form of ice usually, this source is not used. But in desert regions where there is severe shortage of water, ice or snow is a good

source of water.

WELLS:

We can reach water reservoirs at different dept by digging into the surface of earth. This water contains number of dissolved impurities. Water from deep wells is purer that of shallow wells.

Q4: What is water cycle? What changes may occur in water cycle?

Ans: Have you ever thought from where do we get water? In case water is not continuously supplied to the water bodies, they should have dried up long back. It is due to water cycle in nature that drying up is prevented. The water on the surface of the earth vaporises and rises up in the atmosphere. There it condenses to form rain, snow, hailstorm and falls back to the earth's surface. This cyclic process in which evaporation and condensation occur side by side is called water cycle.

Q5: Describe the decantation process by an experiment.

Ans: DECANTATION:

EXPERIMENT:

- ☆ Take some calcium carbonate powder and mud. Add in a glass of water and mix with a spoon.
- ☆ They do not dissolve but remain scattered through out the water. Water becomes cloudy and it is called suspension.
- ☆ If this suspension is left undisturbed for some time the fine particles will slowly settle down at the bottom of the glass.
- ☆ The above clean water can be poured carefully into another glass. This process is called decantation.

Q6: Describe the filtration process by an experiment.

Ans: FILTRATION:

When a liquid contains insoluble particles such as muddy water, the pure water may be obtained by filtration.

EXPERIMENT:

01. Take a filter paper and place it in a funnel and pour muddy water into filter paper.
02. Drop by drop clear water begins to collect in a beaker while solid particles are left on the filter paper.
03. River and canal water contains dirt, dust, humus and other impurities.
04. When it is supplied for drinking most of these impurities are removed from water by filtering it through sand and gravel filter beds.
05. A small amount of chlorine gas is passed through the filtered water to kill the germs. It can be removed by boiling the water before using it for drinking purpose.

CHAPTER EIGHT

SOLUTION AND SUSPENSION

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. A_____is a combination of substances.
(Element, Mixture, Solute)
02. A_____is homogeneous mixture.
(Solution, Suspension, Crystallization)
03. There are_____component of solution.
(Two, Three, Four)
04. The component of solution which dissolves in smaller, quantity is called_____.
(Solute, Solvent, None of these)
05. The component of solution which dissolves in larger quantity is called_____.
(solute, solvent, crystals)
06. Any solution in which water is taken as solvent is called _____solution.
(Dilute, Aqueous, Super saturated)
07. The amount of solute dissolved in a specific amount of solvent is known as the_____ of the solution.
(Mole, Concentration, Mass)
08. Pure water freezes at_____.
(0°C, 10°C, -10°C)
09. Pure water boils at_____.
(-100°C, 100°C)
10. _____is the process in which dissolved solute comes out the solution and form crystals.
(Hydration, Hydrolysis, Crystallization)
11. The amount of solute dissolved in lOOgm of the solvent is called _____ .
(Solubility, Electrolysis, Hydrolysis)
12. Solubility increases with the increase in _____.
(Temperature, Pressure, Volume)
13. The formula of common salt is_____.
(NaCI, 2NaCI, NCI2)
14. The formula of copper sulphate is _____.
($CUSo_4$, $CaS0_4$, KNo_3)

15. The formula of sodium sulphate is_____. ($Na2S0_4$, $ZnS0_4$, $NaNO_3$)

ANSWER KEY			
01	Mixture	02	Solution
03	Two	04	Solute
05	Solvent	06	Aqueous
07	Concentration	08	0°c
09	100°c	10	Crystallization
11	Solubility	12	Temperature
13	NaCI	14	$CUSo_4$
15	Na_2S0_4		

SHORT ANSWER QUESTIONS

Q1: What is mixture?

Ans: MIXTURE:

A mixture is a combination of substances or more correctly a mixture can be defined as a heterogeneous combination of substances.

Q2: What is solution?

Ans: SOLUTION:

Solution is a mixture that contains dissolved substances. It may be solid, liquid or gas. Solutions are homogeneous mixture and a homogeneous mixture of two or more pure substances.

Q3: Name component of solution.

Ans: COMPONENT OF SOLUTION:

☆ Solute ☆ Solvent

Q4: What is suspension?

☆ **SUSPENSION:**

If a fine sand is stirred in water the crystals do not dissolve such mixture is called suspension.

Q5: What is solubility?

Ans: SOLUBILITY:

The amount of solute dissolved in lOOgm of the solvent is called solubility.

Ans: FACTORS AFFECTING SOLUBILITY:

There are some factors that can affect the solubility.

01. Nature of solute and solvent.
02. Temperature.
03. Pressure

04. Particle size
05. Stirring

Q7: What is crystallization?

Ans: CRYSTALLIZATION:

Crystallization is the process in which dissolved solute comes out the solution and form crystals.

LONG ANSWER QUESTIONS

Q1: Define the term.

Ans: 01. SOLUTE:

The component of solution which dissolves in smaller quantity is called solute.

02. SOLVENT:

The component of solution which dissolves in larger quantity is called solvent.

03. AQUEOUS SOLUTION:

Any solution in which water is taken as solvent is called aqueous solution.

Q2: Define the factors affection solubility.

Ans: FACTORS AFFECTING SOLUBILITY:

There are some factors that can affect the solubility.

01. Nature of solute and solvent.
02. Temperature.
03. Pressure.

☆ **NATURE OF SOLUTE AND SOLVENT:**

Solubility increases with the increase in temperature or we can say that an increase in the temperature of a solution increases the solubility of the solid solute.

TEMPERATURE:

Solubility of a solid increases with increase in temperature. But the solubility of gases in a liquid decrease with increase in temperature.

PRESSURE:

Pressure has little effect on the solubility of solids but an increase in pressure causes greater quantity of gas to dissolve.

Q3: What is difference between solution and suspension?

Ans:

SOLUTION	SUSPENSION
Solution is a mixture that contains dissolved substances.	Suspension is defined as a heterogenous mixture consists of visible particles.

Q4: Write use of Suspension.

Ans: USES OF SUSPENSION:

In food industries, food additives lie in food product suspension. The preparation of a food product from a hydrous paste means the preparation of a suspension on the basis of casein (milk protein) followed by texturization.

Q5: Define saturated, unsaturated and super saturated solution.

Ans: SATURATED SOLUTION:

The solution which contains maximum amount of solute in a given solvent at a specific temperature and no more solute dissolves in it is known as saturated solution.

UNSATURATED SOLUTION:

The solution in which the amount of the solute is less than solvent. It has the capacity to dissolve in large quantity of solvent is called un-saturated solution.

SUPER SATURATED SOLUTION:

A super saturated solution contains greater amount of dissolved solute than that are present in a saturated solution. It is obtained by dissolving solute in a saturated solution on heating.

CHAPTER NINE

INTRODUCTION TO PHYSICS

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. The word physics is derived from the _____ word physikos which means nature.
(Arabic, Greek, Latin)
02. The study of matter and energy is called _____.
(Physics, Physiology, Psychology)
03. The _____ first time manufactured paper.
(Asians, Chinese, Europeans)
04. _____ used to measure the flood level in the river Nile.
(Egyptian, European, English)
05. The history of physics consists of _____ periods.
(Three, Four, Five)
06. In Biology, the microscope is used, which is invention of _____.
(Biology, Chemistry, Physics)
07. _____ is the abbreviation of light amplification by simulated emission of radiation.
(Laser, Launcher, Lubricants)
08. _____ means to detect and find range of an object with radial method.
(Rada, Radon, Redox)
09. Satellite is a _____ object which consists of different devices.
(Spherical, Square, Rectangular)
10. The average distance of the sun from the earth is _____ million kilometres.
(120, 150, 180)
11. The sun contains _____ gases.
(Hydrogen and Helium, Sulphur and scandium, Boron and scandium)
12. The surface temperature of the sun is _____ °c.
(3000°c, 6000°c, 9000°c)
13. _____ takes 248 year to complete on revolution.
(Pluto, Mercury, Jupiter)
14. _____ is about the same size as the earth.

(Mercury, Mars, Venus)

15. _____is a red, rocky planet about half the size of the earth.
(Mercury, Mars, Venus)

ANSWER KEY			
01	Greek	02	Physics
03	Chinese	04	Egyptian
05	Three	06	Physics
07	Laser	08	Radar
09	Spherical	10	150
11	Hydrogen and Helium	12	6000°C
13	Pluto	14	Venus
15	Mars		

SHORT ANSWER QUESTIONS

Q1: What is Physics?

Ans: PHYSICS:

The word physics is derived from the Greek word physikos which means natural. It is the branch of natural science that deals with the study of properties of matter and energy and also relation between them.

Q2: Define history of physics.

Ans: HISTORY OF PHYSICS:

The history of Physics is as old as human civilization. Even the cave man aware of the production of fire by rubbing two stones together. The Chinese first time manufactured paper. Egyptian used to measure the flood level in the river Nile. The people of Indus valley were the pioneers of decimal system. The history of Physics consists of three periods.

(1) Initial Period (2) Golden Period
(3) Modern Period

Q3: Write the importance of Physics.

Ans: IMPORTANCE OF PHYSICS:

Most of these inventions were wonder of physics for example. Loud speaker in the Masjid, drawing water from the well. Similarly we use tape recorder to listen Naats, songs etc. Dramas, movies are shown on TV Screen and computer are very common for pleasure of entertainment.

Aeroplanes, rockets, aircrafts etc have opened the door of Astrology. All these have become possible due to physics.

Q4: What is Laser?

Ans: LASER:

Laser is the abbreviation of light amplification by simulated emission of radiation. It is device that produces a beam of radiation with unusual properties coherent, monochromatic and parallel.

Q5: What is Radar?

Ans: RADAR:

Radar means to detect and find range of an object with radial methods. Radar is largely used for the war purposes. This device works as a guidance for aeroplane and ships on air ports and sea ports respectively.

Q6: What is satellite?

Ans: SATELLITE:

Satellite is a spherical object which consists of different devices. It suspends in a particular position of space. Several satellites are revolving around the earth in their orbits. Satellite is mainly used for the communication purposes.

Q7: What is solar system?

Ans: SOLAR SYSTEM:

The sun, the nine planets, their moons and the other heavenly bodies that revolve around the sun form the solar; system.

LONG ANSWER QUESTIONS

Q: What is Islamic Teachings on Physics (Science)?

Ans: ISLAMIC TEACHINGS ON PHYSICS (SCIENCE):

The basic principles of science are based upon the observations of nature. The evaluation of science is based upon the experiment and Islam is the only religion which emphasizes on these facts and functions through its comprehensive message "The Holy Quran". It is very clear from first ever verse revealed on the last prophet Hazrat Muhammad (S.A.W.W).

QURANIC VIEW:

Read with the name of Allah, the creator, who has created man from frozen blood, And your ultimate lord is very merciful who taught the man with pen those things which he knew not. (Surah AI-Alaq Verses 1-5)

The Holy Quran stresses the man for acquaring knowledge and for provoking ideas by the following frequently used words which arise questions in the human mind.

Don't you see / observe?
Don't you think / ponder?
Don't you analyse?

Q2: Write the uses of laser.

Ans: USES OF LASER:

01. It is used in jet, missile technology.
02. It is used in medicine.
03. It is used for operations like ulcer, tumurs and blockage of arteries.
04. it is used in grinding the stone and remove stones from kidney, spleen etc.
05. It is used in welding.

Q3: Write the structure of Radar. Also write its uses.

Ans: STRUCTURE OF RADAR:

Radar consists of a transmitters, receiver and other several indicating devices. Electromagnetic waves of high frequency i.e more than 600 MHs produce from a transmiter which are sent in required direction with the help of a concave antena of radar. When these waves strike a body, they reflect back. With this reflection, we can detect and find range of a body. These waves travel with velocity of light.

USES OF RADAR

01. Radar is used for the forecasting of weather, tornadoes etc.
02. It is used to detect the position and direction of satellite.
03. It is also used for military purposes on land and sea.

Q4: Describe the transmission of satellite.

Ans: TRANSMISSION OF SATELLITE:

Due to high power, satellite recieves signals from an object or a body. Then it amplifies these signals and transmits. On the earth these signals are received with the help dishes and satellite receivers. We often see games, news and other world affairs from distant parts of the world by this principle.

Q5: Define the terms.

Ans: MERCURY:

Mercury is covered with many bowl-shaped holes called croters. It is very close to the sun. It is boiling hot on Mercury during the day. Mercury is smaller than the earth, and its gravitational force is not enough to hold on to an atmosphere. Therefore, there is no air on Mercury. There is also no water on Mercury.

☆ VENUS:

Venus is about the same size as the earth. It is covered with thick clouds that trap a lot of heat. This makes venus the hottest planet in the solar system. Water cannot present at such high temperature in liquid form. Venus appears as the brightest planet in the eastern sky in the morning before sunrise. At other times it can be seen in the wetern sky after sunset.

☆ MARS:

Mars is a red, rocky planet about half size of the earth. Its surface is covered with cratera and mountains. It has a very thin atmosphere. There seems to be no water on its surface. It is a cold planet.

☆ JUPITER:

Jupiter is the largest planet. It has a large red spot on its surface. The spot is really a giant storm that has been going on for years. It can be seen as a very bright object in the evening sky for about half the year. Jupiter is a very cold planet as it is far away from the sun. No life can survive at these temperature.

CHAPTER TEN

MEASUREMENT

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. _____is a common practice of every day life.
(Measurement, Stopwatch, Vernier Caliper)

02. All measureable quantities are called _____.
(Biological Quantities) (Physical Quantities)
(Chemical Quantities)

03. A set of fundamental and derived unit is known as_____.
(System of Series) (System of Decimal)
(System of Units)

04. There are _____ systems of units in the world.
(Three, Four, Five)

05. Metre, Kilogram, Second is the full form of _____.
(S.I, M.K.S, C.G.S)

06. _____ system of unit is convenient for scientific work.
(S.I, M.K.S, C.G.S)

07. Now a days _____ units are used throughout the world.
(S.I, M.K.S, C.G.S)

08. The S.I unit of length is _____ .
(Metre, Metre/ second, Metre . second)

09. The S.I unit of mass is _____ .
(Kilogram, Milligram, Gram)

10. The S.I unit of time is_____.
(Second, Minute, Hour)

11. The S.I unit of Electric Current is_____.
(Volt, Coulmb, Ampere)

12. The S.I unit of temperature is _____ .
(Joule, Kelvin, Calorie)

13. A_____is a length measuring instrument.
(Metre ruler, Stop watch, Physical balance)

14. A_____is used to measure the time interval of an event.
(Measuring cylinder, Stopwatch, physical Balance)

15. The mass of an object is measured by_____.
(Physical balance, Stop watch, Metre ruler)

ANSWER KEY			
01	Measurement	02	Physical quantities
03	System of Units	04	Four
05	M.K.S	06	S.I
07	S.I	08	Metre
09	Kilogram	10	Second
11	Ampere	12	Kelvin
13	Metre ruler	14	Stop Watch
15	Physical Balance		

SHORT ANSWER QUESTIONS

Q1: What is measurement? Give at least two examples

Ans: MEASUREMENT:

Measurement is the common practice of every day life. This routine work starts from morning till late hours in the night. Every morning a milkman comes and gives a measured volume of milk. If one goes to a shop to purchase sugar, the shopkeeper will weigh the required amount of sugar by his common balance and will handover it to the purchaser.

Q2: Name some measuring instruments.

Ans: MEASURING INSTRUMENTS:

Measuring cylinder, common balance, digital balance, metre scale and stop watch are measuring instruments.

Q3: What is Physical Quantity?

Ans: PHYSICAL QUANTITY:

All measurable quantities are called physical quantities such as length, mass, time and temperature. A physical quantity possesses at least two characteristics in common. One is its numerical magnitude and the other is the unit in which it is measured.

Q4: What is system of Units?

Ans: System of Units:

A set of fundamental and derived units is known

as system of units.

Q5: Name the system of Units.

Ans: 01. M.K.S System. 02. C.G.S System.
03. F.P.S System. (Foot, Pound, Second)
04. S-I System (System International)

Q6: Name the instruments which are used for measuring volume, mass and time.

Ans: VOLUME:

Volume is measured by measuring cylinder.

MASS:

Mass is measured by Physical balance and electronic balance.

TIME:

Time is measured by watch, clock and stop watch.

Q7: Give the S-I unit of the following quantities. Length, Mass, Electric, Current, Intensity of Light, Temperature, Amount of Substance.

Ans:

s.#	Quantities	Units
01	Length	Metre
02	Mass	Kilogram
03	Electric Current	Ampere
04	Intensity of light	Candela
05	Temperature	Kelvin
06	Amount of Substance	Mole

LONG ANSWER QUESTIONS

Q1: Define base and derived in detail.

Ans: BASE QUANTITIES:

There are seven physical quantities which are form the foundation for other physical quantities. These physical quantities are called the base quantities. These are length, mass, time, electric current, temperature, intensity of light and amount of a substance.

DERIVED QUANTITIES:

Those physical quantities which are derived from base quantities are called derived quantities. These include area, volume, speed, force, work, energy, power, electric charge, electric potential etc.

Q2: Define base and derived units.

Ans: BASE UNITS:

The units that describe base quantities are called base units.

The following table shows seven base quantities, their units and their symbols.

QUANTITY		UNIT	
NAME	**SYMBOL**	**NAME**	**SYMBOL**
Length	I	Metre	m
Mass	m	Kilogram	kg
Time	t	Second	s
Electric Current	I	Ampere	a
Intensity of Light	L	Candela	cd
Temperature	T	Kelvin	k
Amount of a substance	n	Mole	mol

DERIVED UNITS:

The units used to measure derived quantities are called derived units. Derived units are defined in term of base units and are obtained by multiplying or dividing one or more base units with each other.

The following table shows derived quantities, their units and their symbols.

QUANTITY		UNIT	
NAME	**SYMBOL**	**NAME**	**SYMBOL**
Speed	V	metre per second	m/s
Acceleration	a	metre per second squire	m/s2
Volume	V	Cubic metre	m3
Force	F	newton	N
Pressure	P	Pascal	Pa
Density	P	Kilogram per Cubic metre	Kgm3
Charge	Q	Coulomb	C

Q3: Write a note on measuring cylinder.

Ans: MEASURING CYLINDER:

A measuring cylinder is a glass or transparent plastic cylinder. It has a scale along its length that indicates the volume in milli litre (ml). Measuring cylinders have different capacities from 100 ml to 2500ml. They are used to measure the volume of

a liquid or powered substance.

Q4: Write a note on Stopwatch.

Ans: STOPWATCH:

A stopwatch is used to measure the time interval of an event. There are two types of stopwatches. Stopwatch is shown in above figure. A mechanical stopwatch can measure a time interval up to a minimum 0.1 second. Digital stopwatches are commonly used in laboratories can measure a time interval as wall as 1/100 second or 0.01 second.

Q5: Write a note on Physical Balance in detail.

Ans: PHYSICAL BALANCE:

A physical balance is used in the laboratory to measure the mass of various objects by comparison. It consists of beam resting at the centre on a fulcrum as shown in above figure. The beam carries scale pans over the books on the other side. Unknown mass is placed on left pan.

CHAPTER ELEVEN

FORCE AND MACHINE

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. _____is used to stop a moving body.
(Force, Rest, Motion)
02. _____is agent which produces the motion in a body.
(Force, Friction, Fluid)
03. The S.I unit of force is_____.
(Newton/metre, Newton, Newton2)
04. Force is measured by_____.
(Force meter, Volt metre, Ohm metre)
05. _____usually means either push or pull.
(Fluid, Force, Tension)
06. There are_____types of force.
(Two, Three, Four)
07. _____involves physical contact between objects.
(Frictional force, Gravitational force, Magnetic force)
08. Air resistance is a special type of_____.
(Frictional force, Gravitational force, Magnetic force)
09. We_____our machines by putting oil to keep them running smoothly.
(Heat, Lubricate, Charge)
10. _____is the force that pulls things down towards the earth.
(Gravity, Friction, Magnet)
11. The constant value of g is_____.
(9.8 m/s^2, $6.67x10^{-11}$, $6.8xl0^{24}m$)
12. The word kinematic is derived from the _____ kinemia meaning motion.
(Latin, Greek, French)
13. A book is laying on a table is the state of _____.
(Rest, Motion, Gravity)
14. The motion of a body is straight line is called_____ motion.

(Translatory, Linear, Both)

15. The rotation of the earth is_____motion. (Translatory, Rotatory, Vibratory)

ANSWER KEY			
01	Force	02	Force
03	Newton	04	Forcemeter
05	Force	06	Two
07	Gravitational Force	08	Frictional Force
09	Lubricate	10	Gravity
11	9.8 m/s^2	12	Greek
13	Rest	14	Translatory
15	Rotatory		

SHORT ANSWER QUESTIONS

Q1: What is force?

Ans: FORCE:

Force is an agent which produces the motion in a body or stops the motion of a body. In other words we can say that force is an agent which changes the state of rest of a body or state of motion of a body. The S.I unit of force is newton (N). It is measured by force metre.

Q2: What is friction?

Ans: FRICTION:

The force which opposes the motion of a body while in continuous contact with the other body is called friction or force of friction.

Q3: What is gravity?

Ans: GRAVITY:

Gravity is the force that pulls things down towards the Earth. On earth pulls everything due to the force of gravity. It is denoted by "g".

Q4: What is magnetic force?

Ans: MAGNETIC FORCE:

Magnets are substances that attract some other substances and are generally made up of iron. This is called magnetic force.

Q5: What is magnetic Field?

Ans: MAGNETIC FIELD:

The area around a magnet where the force of a magnet acts is called magnetic field.

Q6: What is mechanics?

Ans: MECHANICS:

Mechanics is the branch of physics that deals with the kinematic and dynamics of objects.

Q7: Define rest and motion.

Ans: REST:A body is said to be in the state of rest when it does not change its position with respect to its surrounding.

EXAMPLES:

☆ A book laying on a table.
☆ A train standing on the platform.
☆ A pigeon sitting on a wall. MOTION:

A body is said to be in the state of motion when it changes its position with respect to its surrounding.

EXAMPLES:

☆ A moving train.
☆ A moving car.
☆ A walking girl.

LONG ANSWER QUESTIONS

Q1: Describe the advantages of friction.

Ans: ADVANTAGES OF FRICTION:

☆ It is the frictional force which helps the wheels of a train to stay on the railway track.
☆ Air resistance is a special type of frictional force which acts upon objects when they travel through the air.

Q2: Write the method of reducing friction.

Ans: METHODS OF REDUCING FRICTION:

Some time we need the reduce friction between objects. We lubircate our machines by putting oil to keep them running smoothly. Many other methods can be used to reduce the amount of friction between the surfaces of the object. Use of oil, rollers or ball-bearings between the surfaces can reduce the negative frictions.

Q3: Describe Kinematics and Dynamics in detail.

Ans: KINEMATIC:

The word kinematic is derived from the Greek word kinemia meaning motion.

The branch of physics which deals with the motion

of the objects without any reference to the force or agent causing the motion is called kinematics.

DYNAMICS:

The word dynamics is derived from Greek word dynami meaning power.

The dynamic is the branch of physics which deals with the causes of motion and how forces affect motion In kinematics, we study the position and motion of an object in at a certain time without considering the causes of motion. In dynamics we study the pushes or pulls which causes or resist the motion.

Q4: Describe the types of motion.

Ans: MOTION:

There are following types of motion.

☆ Translatory motion.
☆ Rotatory motion.
☆ Vibratory motion.

TRANSLATORY MOTION:

The motion of a body in straight line is called linear motion or translatory motion. In this type of motion, a body moves in a straight or curved path. Every particle in the body is being displaced.

EXAMPLE: (1) Falling bodies
(2) The flight of an aeroplane.
(3) Movement of car on road.

ROTATORY MOTION:

If a body spins or rotates about a fixed point or axis, its motion is called rotatory motion.

EXAMPLES:

(1) The rotation of the earth.
(2) The rotation of wheel.
(3) The motion of electric fan.

VIBRATORY MOTION:

To and for motion of body is called vibratory motion. It is also called oscillatory motion.

EXAMPLES:

(1) To and for motion of a swing.
(2) Vibration of the wings of a bird.
(3) The motion of spring of violin.

CHAPTER TWELVE

SIMPLE MACHINE

EXERCISE

A. CHOOSE THE CORRECT ANSWER.

01. _____ _ is a device that helps us to do work.
(Matter, Machine, Mechanic)
02. We use_____to draw water from the well.
(Cycle, Pulley, Truck)
03. Machine is used to_____the force.
(Increase, Decrease, Balance)
04. Machine is used to_____speed of work.
(Increase, Decrease, Balance)
05. There are_____kinds of machine.
(Two, Three, Four)
06. The devices such as a handle, a pulley or wooden plank are known as_____machine.
(Simple, Complex, Electronics)
07. _____ machines are made by combining simple machines.
(Simple, Complex, Electronics)
08. Simple machines from_____families.
(Two, Three, Four)
09. It is used to lift heavy objects and made up of rigid bar.
(Lever, Pulley, Inclined plane)
10. In_____kind of lever the (fludfura is located between the effort and the load.
(First, Second, Third)
11. Which is example of second kind of lever?
(Scissors, Broom, Wheel borrow)
12. Which is example of third kind of lever?
(Hammer, Shavel, Seesaw)
13. An_____is a plane surface, makes an angle "Theta".
(Wedge, Lever, Inclined plane)
14. The force is applied to a machine for doing work is called_____.
(Efficiency, Input, Output)
15. The weight lifted or resistance overcome by a

machine is called_____.
(Efficiency, Input, Output)

ANSWER KEY			
01	Machine	02	Pulley
03	Increase	04	Increase
05	Two	06	Simple
07	Complex	08	Pulley
09	Lever	10	First
11	Scissor	12	Hammer
13	Inclined Plane	14	Input
15	Output		

SHORT ANSWER QUESTIONS

Q1: What is machine?

Ans: MACHINE:

Machine is a device that helps us to do work easily.

Q2: Name types of machines.

Ans: TYPES OF MACHINE:

(1) Simple Machine
(2) Complex Machine

Q3: Name the simple machine that are in lever family.

Ans: Scissor, hammer, plier, wheel barrow.

Q4: What is lever?

Ans. LEVER:

Lever is one of simple machines. It is a device used to lift heavy objects. It is made up of a rigid bar that can turn the objects at a fixed point.

Q5: Define effort and load.

Ans: EFFORT:

The force applied to a machine for doing work is called effort. It is denoted by "P".

LOAD:

The weight lifted or resistance overcome by a machine is called load. It is denoted by "W".

Q6: Define input and output.

Ans: INPUT:

The workdone on a machine by the effort is called input. If an effort P acts through a distance d, then the workdone by the machine or input is

given by. Input = Effort x distance through which the effort acts.

Input = Pxd

OUT PUT:

The workdone by the machine on the weight is called output. If a machine moves a load "w" through a distance "h" then the workdone or the output of the machine is given by:

Output = Effort x distance through which the load moves.

Output = wxh

Q7: What is efficiency?

Ans: EFFICIENCY:

The ratio between the useful workdone by the machine (output) to the workdone on the machine (input) is called efficiency.

Q8: What is mechanical advantage?

Ans: MECHANICAL ADVANTAGE:

The ratio between the load lifted and the effort applied is called the mechanical advantage of a machine.

LONG ANSWER QUESTIONS

Q1: Write the purpose of machine.

Ans: PURPOSE OF MACHINE:

With the help of machine we can transfer the force fromone place to another place.

Some purposes of machine are under as following:

(1) To increase force
(2) To increase speed of work.
(3) To change the direction of force.

Q2: Define simple machine and complex machine.

Ans: SIMPLE MACHINE:

The devices such as a handle, a pulley or wooden planks are known as simple machines.

COMPLEX MACHINE:

Complex machines are made by combining simple machines.

Q3: Define types of Lever?

Ans: TYPES OF LEVER:

There are three kinds of lever. Basically the principle of working behind each of its kind is similar but differences in these kinds of lever are due to the relative position of basic components symbolized as E=effort, Fulcrum = F,L=load.

☆ **FIRST KIND LEVER:**

In the first kind of lever the fulcrum is located between the effort and the load. Effort moves farther than load. Effort force multiplies and changes its direction. We use many things in our daily life that work on the principle of the first kind of lever.

SECOND KIND LEVER:

In the second kind lever the load is located between the fulcrum and the effort. When the fulcrum is located closer to the load than to effort force, an increase in force results but does not change its direction.

THIRD KIND LEVER:

In the third kind of lever the effort is located between the fulcrum and the load. This kind does not change the direction of force but produces gain in speed and distance and a decrease in force. So it means it does not multiply force and kind first and second evers do.

Q4: Define: (1) Incline Plane (2) Pulley

Ans: INCLINE PLANE:

In inclined plane is a plane surface makes an angel "θ"A ramp is common example of inclined plane and it is used to reduce the amount of force required to move an object to height as we see in lever.

A road winding round a mountain is an example of an inclined plane. It is easier to walk up the winding road than to climb up the mountain-top.

PULLEY:

A pulley is a simple machine. It consists of a length of rope round a wheel that is fixed to a support, such as a beam. A load is attached to one end of the rope, and the other end is pulled. It is easier to pull down on the rope than to lift

the weight directly upward. Pulleys with more than one wheel allow a small force called the effort to lift a heavy load. The more wheels a pulley has, the easier it is to lift a load, as the weight of load is spread out over more ropes.