UNIT 1
CIRCULAR ORGANIZATION

WORDS MEANINS

Words	Meanings	Words	Meanings
Excrete	خارج کرنا	Nerve	رگ /عصب
Tiny	ننھا/چھوٹا	Secretion	اخراج
Slice	ٹکڑا	Organ	عضو
Stain	داغ /میلا کرنا	Bladder	مثانہ
Swab	جھاڑو	Respond	جواب دینا
Toxin	جراثیمی زہر	Unicellular	یک خلوی
Pigment	رنگ روغن	Apparent	نمایاں/واضح
Scrape	کھرچنا	Granules	دانے
Epithelial	سرحلمی	Skeletal	ڈھانچہ نما
Broom	جھاڑو	Nutrients	غذائی اجزاء
Abundance	کثرت/ زیادتی	Gel	سریش
Muscles	پٹھا/عضو	Cartilage	چینی ہڈی

Exercise

A. choose the correct options.

1. Which of the following is absent in an animal cell?

a) Protein
b) Water
c) Salt
d) **Cellulose**

2. What is the main difference between Plant and Animal cell?

a) Plant cell has the nucleus, it is absent in animal cell.
b) **Plant cell has a cell wall which is absent in the animal cell.**
c) Animal cell is larger than the plant cell
d) Plant cell has no chlorophyll.

3. All plant cell do not contain chloroplast, plant cell without chloroplast is:

a) Green stem cell
b) Leaf cell
c) **root hair cell**
d) bud cell

4. Which of the following organelle is responsible for carrying the genetic information inside the nucleus?

a) **Chromosome**
b) Cell membrane
c) Ribosome
d) Vacuole

5. Which of the following traps sunlight energy for the process of photosynthesis?

a) Cytoplasm
b) Vacuole
c) Cellulose
d) **Chlorophyll.**

6. Imagine if you had no bones, what would happen to you?

a) Waste would increase in your blood
b) Your food would not digest.
c) Your blood would have more carbon dioxide
d) **You would be floppy.**

7. Which of the following is the correct pathway of organization.
a) Cell —- Organ system —- organ —- tissue.
b) Tissue—- organ —- cell —- organ system.
c) Organ system —- cell —- organ —- tissue.
d) **Cell — tissue — organ — organ system.**

8. Liver is a part of:
a) **Digestive system.**
b) Circulatory system.
c) Respiratory system.
d) Nervous system.

9. Which structure controls the functioning of a cell?
a) Cytoplasm.
b) Cell membrane.
c) **Nucleus.**
d) Vacuole.

10. Layers of plant cells that cover and protect plant parts are grouped to form:
a) **Epidermal tissue**
b) Photosynthesis tissue
c) Supporting tissue
d) Vascular tissue.

B. True and false (correct the statement if it is false)

1. Muscles cover the body and they are example of animal tissues. **False.**
Ans:
Epithelial tissue cover the body and they are example of animal tissues.

2. Mitochondria is the powerhouse of cell and provides energy to all the cell. **True**

3. Tissue are group of organisms with shared Structure and function. **False**
Ans: Tissues are group of similar cells with shared structure and function.

4. The control unit of the cell is cytoplasm. False
Ans: The control unit of the cell is nucleus.

5. Nervous system provides support and protection to the organism. False.
Ans: Skeletal system provides support and protection to the organism.

C SHORT QUESTIONS.

1. **What would happen to the plant cell if it had no cell wall?**
Answer:
Cell wall gives the plant cell a fixed shape. The cell wall allows free passage of water and dissolved substances. Without cell wall the plant will collapse under its own weight.

2. **How does a cell get water and nutrients?**
Answer:
Water moves across cell membranes by diffusion, in a process known as osmosis. Cell get nutrients from the blood trough a process known as osmosis.

3. **Do unicellular organisms have tissues shoes?**
Answer:
By definition, unicellular organisms do not have any tissues.

4. **What does specialization of cell means?**

Answer:
Specialization of cell is a process by which generic cells change into specific cells to do certain task within the body. It is also called cell differentiation.

5. Why do plant cells need both chloroplast and mitochondria?

Answer:
Plant cell need both chloroplast and mitochondria because they perform both photosynthesis and cellular respiration.

C. LONG QUESTION

1. Describe the properties of living things.

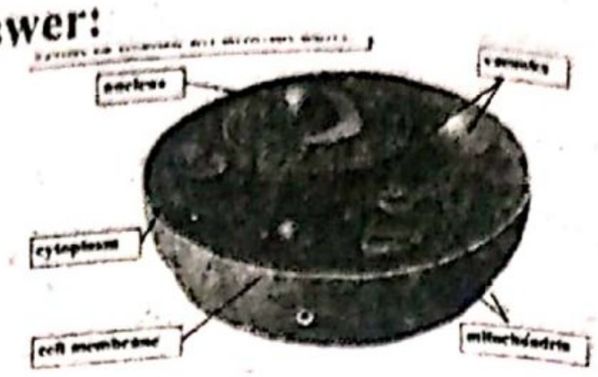
Answer:

Some properties of living things are :

a. They need food.
b. They grow with the passage of time.
c. They excrete wastes.
d. They can move.
e. They are made up of cells.
f. They reproduce for continuity of life.

2. Draw and describe animal cell.

Answer:



Animal cell consists of the following parts:

Cell membrane:
It is outer covering of animal cell. It control the Passage of materials in and out from the cell.

Cytoplasm:
It is viscous fluid between nucleus and cell membrane.

Nucleus:
It is the most important part of cell. It controls all the activities of the cell.

Vacuole:
It Store waste material for some time before its removal.

Mitochondria:
It is powerhouse of the ceil.

Q2. Name seven human organ system enlist their components and describe their functions.

Answer:

Organ system	components	functions
circulatory system	Heart, Artery, veins	it circulate the blood throughout the body
Muscular System	Bicep, tricep.	It works with bones to help in moving.
digestive system	Mouth liver stomach small and large intestine	It digest the food in the body
nervous system	Brain, nerve and spinal cord.	it controls all the body activities

respiratory system	nose, windpipe, lungs	provide Oxygen and remove carbon dioxide from the blood
excretory system	Kidney, ureter, bladder	It removes waste materials from the body.
skeletal system	Skull, bones	Support and protect the body.

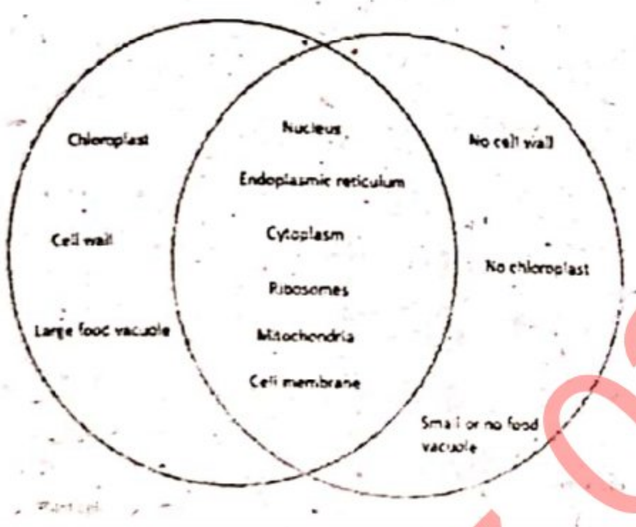
E STRUCTURED QUESTIONS:

1. In the venn diagram below, compare plant and animal cells.

Answer:

Plant cell

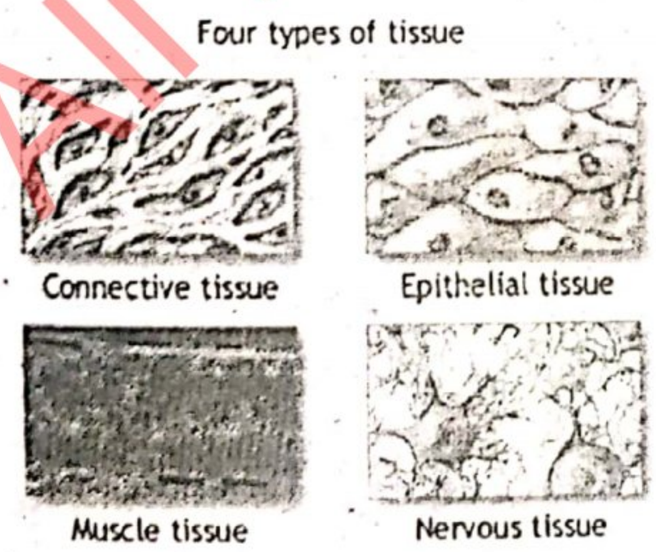
Animal cell



2. Different parts of your arms are shown in the diagram. Write function of each.

Answer:

See Diagram on book page number 16.



Epithelial tissue = covers, protects, and secrets.

Muscular tissue = moves body parts.

Nervous tissue = carry messages to the body

Connective tissue

= connects, transport and supports.

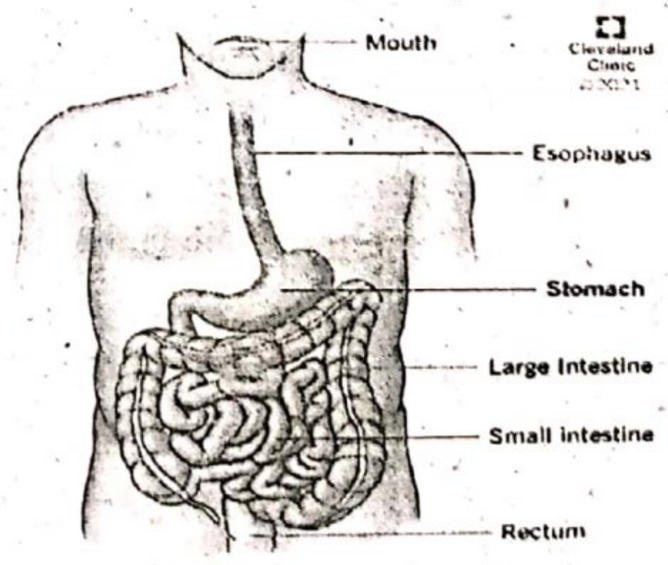
F. project work.

Make a model of human organ system of your choice by using recycled materials. Label it parts. (Group work)

Answer:

Digestive system:

1. Esophagus
2. Liver
3. Stomach
4. small intestine
5. large intestine
6. Rectum



UNIT: 2

REPRODUCTION IN PLANTS

Words	Meaning	Words	Meaning
Reproduction	پیدائش نسل	Pollination	منتقلی
Fusion	پگھلاو	Tuber	زیرزمین تنا
Dispersal	انتشار/ بکھر جانا	Swollen	ٹگنا
Budding	پھوٹنا	Mound	ٹیلا/ تودہ
Shrub	جھاڑی	Grafting	پیوندکاری
Cope	مقابلہ کرنا	Artificial	مصنوعی
Propagation	توسیع/ اشاعت	Desirable	مناسب/ پسندیدہ
Gamete	زوج	Seedling	تخم کاری

EXERCISE

A. MCQs choose the correct option.

1. Potato can be grown from its seed, but mostly farmers cut pieces of potato tubers and bury them in soil because:
   a) It need more water.
   b) <u>It is quick weight of producing plants.</u>
   c) Potato pieces are useless.
   d) It is the habit of farmers.

2. Farmers prefer vegetative propagation methods because they can:
   a) Produce new varieties.
   b) <u>Grow plants/ crops quickly and easily.</u>
   c) Cope with all type of diseases.
   d) Survive all type of weather changes.

3. Which one of the following is not a process involved in vegetative propagation.
   a) Cutting.
   b) Tuber.
   c) Runner.
   d) <u>Fertilization.</u>

4. Sexual reproduction is a big advantage to a group of organisms because it provide a lot of;
   a) <u>Variety in organisms.</u>
   b) Identical organisms.
   c) Energy for organisms to survive.
   d) Similar copies of parents.

5. Onion plant produces a new plant without the formation of seeds. This type of reproduction is called.
   a) Budding.
   b) Fragmentation.
   c) Fission.
   d) <u>Vegetative propagation.</u>

6. Tulips, lilies and onions can be reproduced by;
   a) <u>Bulbs.</u>
   b) Tuber.
   c) Cuttings.

d) Runners.

7. Stem is a part of a short system which grows in the air. Sometimes stem can be underground in plants like;

a) Rose and Jasmine.
b) Mango and orange.
c) Strawberry and mint.
d) Potato and onion.

8. Potato tubers have depressions called Eyes if it is without

a) Have seeds.
b) Have buds.
c) Can grow branches.
d) Can grow roots.

9. Grafting is done mostly in fruit trees, to provide rootstock which has as;

a) Weak roots.
b) Strong and resistant roots.
c) Disease roots.
d) Small roots.

10. Any layering technique no harm is caused to the parent plant because;

a) Few branches are involved.
b) Some roots are used as rootstock.
c) Some leaves are removed.
d) Some buds are added.

B. Match the columns

Column A	Column B
Bulb	Formation of new organisms without gametes.7
Runner	Swollen underground stem with buds.3
Tuber	Fertilization of gametes. 4
Sexual reproduction	Underground stem with thick fresh leaves.1
Cutting	Piece of stem, root and leaf.5
Plantlets	Stem growing along the ground.2
Asexual reproduction	Buds at margin of leaves.6

SHORT QUESTIONS:

1. Differentiate between sexual and asexual reproduction.

Answer:

Sexual reproduction involves the fusion of male and female gametes. While asexual reproduction involves formation of new plants from vegetative parts like roots, stem and leaves.

2. Why do organisms reproduce? What will happen if a group of organisms is unable to reproduce?

Answer:

Organisms reproduce to continue the chain of life. It a group of organism is unable to reproduce then it will disappear from earth.

3. Define Buds? What are the different structure formed from buds?

Answer:

A Bud is a small swelling that can grow into new branches, leaves or flowers. Roots, shoots and new plant are formed from buds.

4. Why do we seldom see potato seed while we see many potatoes around us?

Answer:

Potatoes have no seed. It has buds. It can be cut and planted to grow a new plant.

5. Compare Artificial and natural vegetative propagation.
Answer:
Natural vegetative propagation refers to natural development of new plant without human intervention. While artificial vegetative propagation refers to the artificial development of new plants by means of human intervention.

LONG QUESTION:

1. Differentiate between sexual and asexual reproduction.
Answer:
Sexual Reproduction:
It involves the fusion of male and female gametes. The male gametes are inside the pollen grain and female Gametes are present in ovule.
Asexual reproduction:
It involves formation of new plants from vegetative parts like root, stem and leaves. It does not require flower or seed formation.

Q.2 Compare artificial and natural vegetative propagation.
Answer:
Natural Vegetative propagation:
Many plants reproduce through vegetative propagation naturally. Methods of natural propagation are budding, bulbs, tuber and runners.
Artificial vegetative Propagation:
It require human action. Common types of artificial vegetative propagation are cutting, layering, grafting and tissue culture.

STRUCTURE QUESTIONS.

1. The tree of 40 fruits is a single tree that grow forty different types of fruits including peaches, plums, apricots, nectarines, cherries, and almonds. It took 10 year for its formation.
See Diagram Book Page# 25
A. which technique of vegetative propagation is used in this tree.
Answer: Grafting.

B. Can you make a tree which can grow more than one type of fruits?
Answer: Yes, we can grow.

C. If such trees are grown in Pakistan will it be helpful for agriculture?
Answer: Yes, it will be Helpful for agriculture in Pakistan.

2. The following figure shows vegetative propagation in geranium plants.
See Figure Book Page # 26
A. Which type of vegetative propagation is used in this figure?
Answer: Cutting.
B. Why a piece of stem from parent plant is placed in water for few days?
Answer: To get sufficient water for root formation.

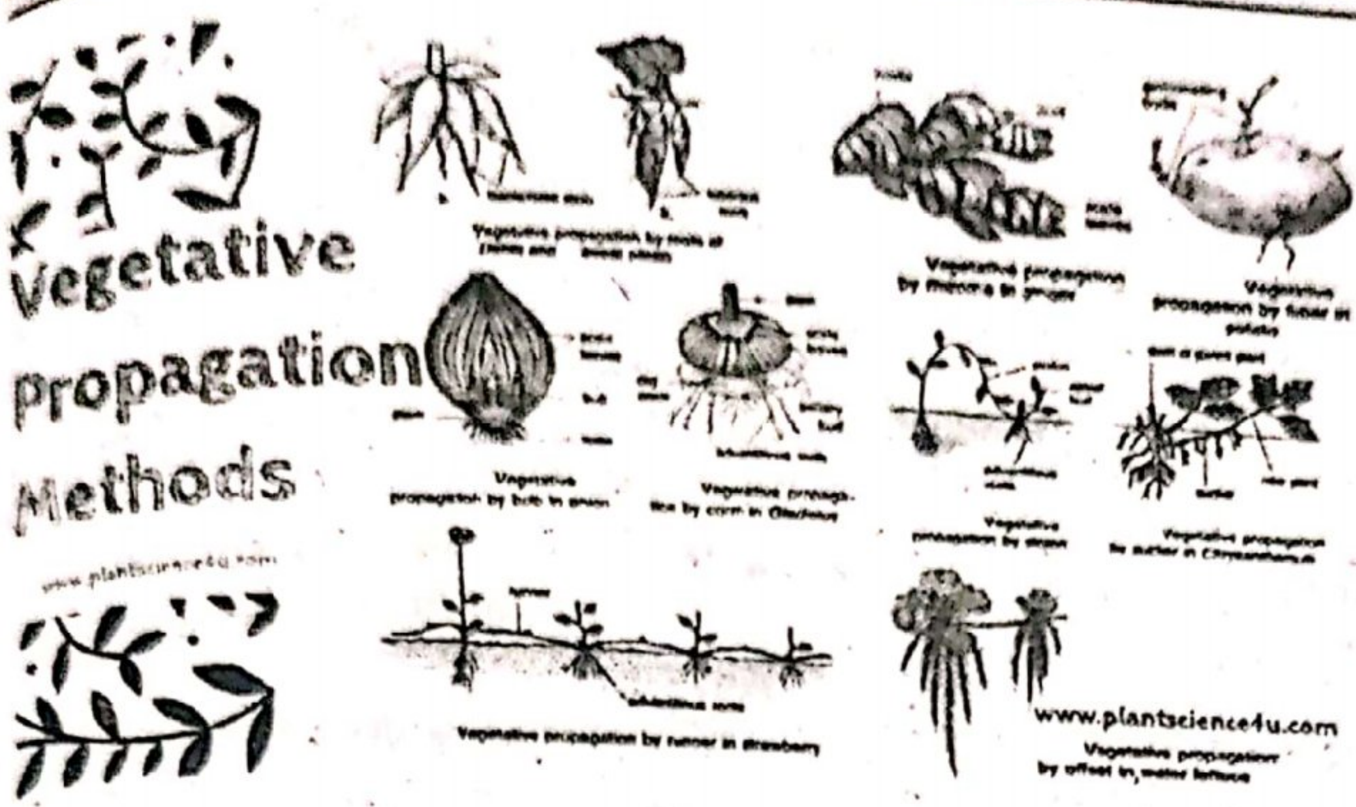
C. Can we get new varieties of geranium plant by this methods?
Answer: No, we cannot get new varieties of geranium.

D. What are the benefits of producing new plants by this methods?
Answer: Its can produce multiple copies of plants quickly.

F PROJECT WORK.

Divide the students in your class in seven groups. Each group has to grow by vegetative propagation method they learned in this chapter. Students can use a ground patch in school or a large pot.

Answer: Practical Activity



UNIT: 3

BALANCED DIET

Words	Meanings	Words	Meanings
Tasty	خوش ذائقہ	Carbohydrates	نشاستہ دار غذا
Minerals	معدنیات	Headache	سر درد
Immunity	قوت مدافعت	Lentils	دالیں
Starch	نشاستہ	Scurvy	دانتوں/مسوڑوں کا مرض ماس خورہ
Fatigue	تھکاوٹ	Heal	زخم ٹھیکہونا
Fats	چربی	Spinach	پالک
Yolk	زردی	Cereals	اناج غلہ
Cucumber	کھیرا	Diet	غذا
Peas	مٹر	Dairy	ڈیری۔دودھ گھر۔شیر خانہ
Active	فعال	Metabolism	اِستحالہ

EXERCISE:

MCQS (Choose the correct option).

1. Hamna likes to eat junk food and refers to eat fruits and vegetables, she will become.
   a) Fit and active.
   b) Healthy and smart.
   c) **Lazy and fat.**
   d) Efficient and energetic.
2. Nasir developed asthma in childhood. His mother has a misconception that dairy products and carrot increase asthma attacks, so these should not be included in his diet. After few year he was unable to see in the dim light and had repeated fractures. It is due to.
   a) Deficiency of fibers.
   b) **Deficiency of vitamin A and calcium.**
   c) Deficiency of carbohydrates.
   d) Deficiency of proteins.

3. Which of the nutrient is helpful for new cells in the body?
   a) **Protein.**
   b) Carbohydrates.
   c) Fats.
   d) Fibers.
4. Fuel of the body is:
   a) Vitamin
   b) **Carbohydrates**
   c) Fats
   d) Fiber
5. Energy is stored in the food in from of:
   a) Minerals
   b) **Calorie**
   c) Diet
   d) Nutrients
6. Meat and fish are good source of:
   a) **Proteins**
   b) Carbohydrates
   c) Fats
   d) Fiber
7. Vitamin C deficiency may lead to
   a) Berry berry.
   b) **Scurvy.**
   c) Night blindness.
   d) Aneamia.
8. A balanced diet is a diet:
   a) With protein carbohydrates and fats.
   b) With all 7 nutrients.
   c) **With all 7 nutrients in appropriate portion.**
   d) With equal amount of seven nutrients.

9. Which type of food is called body building food?
   a) Carbohydrates
   b) **Protiens**
   c) Fats
   d) Minerals

10. Which of the following disease causes the bleeding of gums?
   a) Anaemia.
   b) **Scurvy.**
   c) Rickets.
   d) Bruising.

SHORT QUESTION.

1. Differentiate between food and nutrient.

Answer:

Food is what we eat and drink for energy and to stay alive. And nutrients are part of food that are used by our body cells.

2. In list the food items which are good source of fiber? (Any four)

Answer:

Good Source of Fibers are:
1. Beans
2. Berries.
3. Apple.
4. Dried fruits.

3. Name any two diseases caused by the deficiency of vitamin A and calcium.

Answer:

Two diseases are:
1. Loss of vision.
2. Minimize power of skeletal growth.

4. What type of food we should eat less.

Answer:

We should eat oil and sweets in small amount.

5. In an apple a healthy choice for snack? Justify your answar.

Answer:

Yes, an apple is a good choice for snack, because apple is tasty, high in fiber and help to lower cholesterol.

6. Why balanced diet is important?

Answer:

Balanced diet is important because it keep our body healthy and mentally fit. It also reduce the disease ratio.

7. Why do we need protein our diet?

Answer:

Proteins provides energy and help in making of body cells and muscles. It serves as a fuel source for cells and tissues.

LONG QUESTIONS:

1. Differentiate between micro and macro nutrients and explain the role of macro-nutrients in body.

Answer:

Micronutrients:

They are those nutrients which body our needs in small amount. It include zink, Iron, calcium etc.

Micronutrients:

They are nutrients which a body need in large amount. It include fats, Proteins and carbohydrates.

Macronutrients maintain our body system and structure. It keeps our body healthy. It provide instant energy to our body.

2. How can we have a balanced diet? Elaborate your answer?

Answer:

A balanced diet is a diet that consist all essential nutrients that our body need to perform different functions. A balanced diet should include carbohydrate, proteins, fats and water in appropriate portion.

3. Is there any relationship between diet and fitness? Explain.

Answer:

Yes, there is strong relation between diet and fitness. Balanced diet keeps our body physically and mentally fit. Balanced diet reduce the chance of diseases and thus our body remain fit.

4. Why do various nutrients do in our body?

Answer:

Nutrients performs different functions in our body.

1. It provide energy.
2. Contribute to body structure.
3. Regulate chemical process.
4. Vitamins keep our skin and eye healthy.

D STRUCTURED QUESTIONS:

Protein content of food. The table below shows protein content of some food atoms.

Food	Serving size	Protein (g)
Egg	1 egg	6
Peas	½ cup	4
Spinach	½ cup	3
Walnuts	1 Oz	4
Yogurt	1 cup	11
Pumpkin seeds	1 Oz	9

a. Which food contain the highest amount of protein.
Ans: Egg.
b. How much protein is present in one cup of spinach?
Ans: 6 grams
c. How much Protein is present in 5 eggs?
Ans: 30 grams
d. How much protein is in ½ Oz of walnuts?
Ans: 2 grams.

2. You are invited in your friend House, you are provided with different types of food given below in the table. You have to choose a balanced meal and explainthat how it is a balanced meal.

Food	Food
French fries	Soft drink
Butter rice	Water
Banana	Fried rice
Cottage cheese	Baked chicken
Ice cream	Milk shake
Pizza	Bread with butter
Meat	Vegetable salad
Jelly	Pasta
Tea with milk and sugar.	Baked vegetables.
Lemonade	Apples

Answer:

Healthy items in the above chart are:

Banana, Cottage cheese,Meat, Lemonade,Baked chicken, Milk shake, Bread with butter,Vegetable salad,Pasta,Baked vegetables, Apples.

3. Write the correct nutrients for each food.

SEE Diagram on book page # 40

1. Vitamins.
2. Proteins.
3. Carbohydrates.
4. Vitamins / Minerals.
5. Fats.

4. Match the nutrients to their function.

Nutrients	**Functions.**
Vitamins	Build and repair the body.2
Proteins	Keep body healthy and fight disease. 1
Water	Store energy in the body.4
Fats	Energy giving food.5
Carbohydrates	Keep body clean and help in digestion.3

E PROJECT WORK.

Make healthy and balanced diet menu for your school lunch.

Answer:

For Example:

Monday: Fried rice, Boil Eggs, Apple.
Tuesday: Pasta, Banana, lemonade.
Wednesday: Egg sandwich, mango juice.
Thursday: Grill chicken, lemonade.
Friday: Fish, kiwi.
Saturday: Fried rice, Fresh fruit juice.
Sunday: You can have any fast food for taste and fun.

Practical work: Make a schedule like the above one of your own choice.

UNIT # 4

HUMAN DIGESTIVE SYSTEM.

Words	Meanings	Words	Meanings
Digestion	ہاضمہ۔نظام ہضم	Assimilation	ہضم کرنے یا ہو جانے کا عمل
Chewing	چبانا	Vomiting	قے۔الٹی
Saliva	تھوک	Constipation	قبض
Gland	غدود۔گلٹی	Enzymes	خامرے
Ejection	اخراج/نکال پھینکنے کا عمل	Pancreas	لبلبہ
Diarrhea	دست آنا	Esophagus	غذا کی نالی
Poisoning	زہریلا	Gall bladder	پتا
Texture	بناوٹ	Physical	جسمانی
Bile	زرد آب	Mechanical	میکانی

EXERCISE:

MCQs. (choose the correct option).

1. You take a piece of bread and break it into smaller pieces. It is an Example of.

a) **Physical digestion.**
b) Chemical digestion.
c) Enzyme action.
d) Absorption.

2. Bile help in fat digestion. It is secreted by.
a) Stomach
b) Pancreas
c) **Liver**
d) Gall bladder

3. Two parts of digestive system are involve in both physical and chemical digestion. They are:
a) Mouth and oesophagus.
b) **Mouth and Stomach.**
c) Stomach and small intestine.
d) Small and large intestine.

4. The food you eat take almost 24 hour to move from mouth to anus. This movement is due to the contraction of.
a) Cardiac muscles
b) **Smooth muscles**
c) Skeletal muscles
d) Voluntary muscles.

5. Large molecule of food are broken into small molecule of food with the help of.
a) **Teeth**
b) Tongue
c) Muscles
d) Enzymes.

6. The undigested food is removed from the body by the process of:
a) Ingestion
b) Digestion
c) Absorption.
d) **Egestion.**

7. The small food molecules produced after digestion of food are taken to other parts of the body by:
a) Muscles.
b) Saliva.
c) **Blood.**
d) Intestine.

8. Bile is stored in:
a) Liver
b) **Gall bladder**
c) Pancreas
d) Small intestine.

9. The food we eat may be solid, or liquid but stomach converts it to.
a) Soupy gel
b) **Soupy mixture**
c) Solid balls
d) Watery solution.

10. Stomach produce enzyme and acid for digestion of:
a) Carbohydrates
b) Proteins
c) **Fats**
d) Oil

B SHORT QUESTION.

1. Define Digestion. Why do we need to digest food?
Answer:
Digestion is the breakdown of food into smaller molecules so that is can inter into cells through cell membrane. We need digestion for energy, growth and cell repair.

2. What role do the muscles play in digestion?
Answer:
The muscles of the stomach help in mechanical digestion by mashing the food.

3. What is the benefit of breaking up food into small piece?
Answer: Benefits of beaking up food are.
1. Better food Absorption.
2. No heaviness.
3. Weight loss.
4. Reduce pressure on digestive system.

4. Explain digestive enzymes. Give examples.
Answer:
It is a group of enzymes that break down macromolecules into smaller molecules to facilitate their absorption by the body.
Example:

a) Amylase.
b) Lipase.
c) Protease. Etc.

5. How can villi help in absorption of food?

Answer:

Villi help for absorption in the small intestine. It has a thin wall, one cell tick, which enable a shorter diffusion path. It also help in absorption of fatty acid and glycerol into blood.

C. LONG QUESTIONS:

1. Explain the different type of digestion.

Answer:

There are two types of digestion.

1.Mechanical digestion:

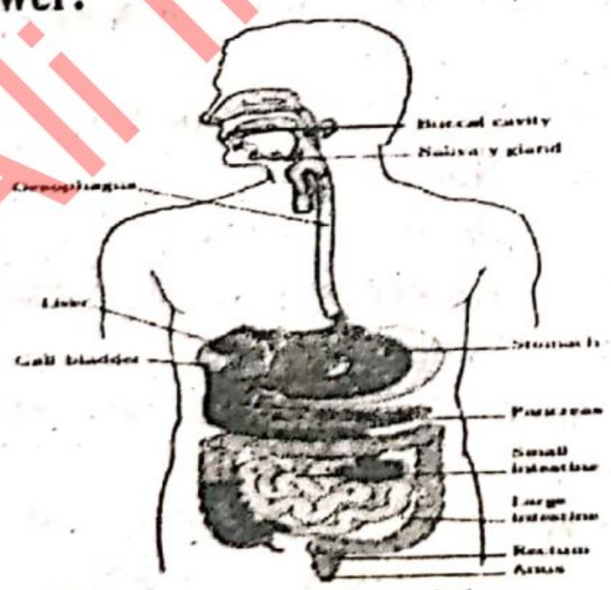
In this type the large pieces of food are broken into smaller pieces by cutting and chewing action of your teeth. It include mouth oesophagus and stomach.

2. Chemical digestion:

In this type the large piece of food are further broken into much smaller pieces by enzymes. The small molecules are absorbed and used by the cell. It includes stomach, small intestine and large intestine.

2. Draw and describe human digestive system.

Answer:



Digestive system consist of the following parts:

1. Mouth: In mouth the food is teared and crushed into small pieces by teeth. The enzyme saliva mixed with food.

2. Oesophygus: It is also called food pipe. It push the swollen food towards stomach.

3. Stomach: The partly digested food inters the stomach. Enzymes and acid mix with food. The muscle push the soupy mixture into small intestine.

4. Small intestine: Enzyme from pancreas digest all type of food into nutrients. These nutrients are absorbed in the blood.

5. Large Intestine: Here water is absorbed from undigested material. Rectum store the solid waste before its excretion.

D STRUCTURED QUESTION:

1. The Following diagram shows change in the starch (a large carbohydrate molecules) in human intestine.

See diagram in text book page: 47

a. Name the food molecule and digestive molecule in the figure.

Answer: Glucose and starch.

b. How starch is converted into glucose?

Answer: During digestion starch is partially transformed into maltose by the enzymes. Maltase then converts maltose into glucose.

c. Glucose molecule do not need to be digested but starch molecule do. Explain this Difference.

Answer: Our body contain enzymes that break starch into glucose. But we don't have enzymes to digest glucose.

2. Compare the empty boxes in this concept map of human digestive system. See table on book page no: 48

or

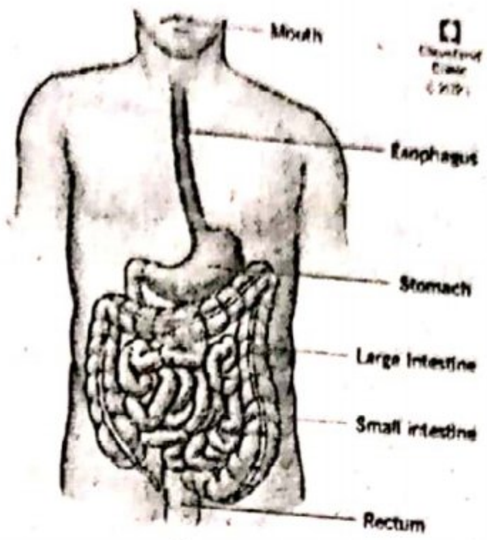
The table given below.

Human digestive system:

E. PROJECT WORK:

Make a chart of human digestive system. Label all its parts and mention their functions as well.

Answer:
This question's answer is same as long question 2 page: 33



Practical work.

UNIT: 5

MATTER AS PARTICLES.

Words	Meanings	Words	Meanings
State	حالت	Squeeze	نچوڑنا۔دبانا
Definite	واضح،روشن	Collide	ٹکرانا
Obviously	صاف طور پر	Diffusion	انتشار، پھیلاؤ
Occupy	قبضہ کرنا	Phenomenon	مظہر
Aroma	خوشبو	Evaporation	عمل تبخیر
Fades	مرجھانا،خشک ہونا	Condensation	عمل تکثیف
Freezing	جمنا	Reversible	قابل منسوخی
Gain	حاصل کرنا	Poured	انڈیلنا
Phase	مرحلہ	Curious	مشتاق۔طالب
Fog	غُبار۔دھند	Harvest	فصل کاٹنا
Saline	نمکین	Marshes	دلدل
Extraction	نکالنے کا عمل	Sublimation	صاف کرنا جوہر اڑانا
Aim	اِرادہ کرنا، خواہش کرنا	Constant	مستقل۔ثابت قدم

EXERCISE:

MCQs- (choose the correct option).

1. What happen when ice cream change from solid to liquid.
   a) Freezing
   b) **Melting**
   c) Burning
   d) Evaporation.
2. A gas:
   a) Has a definite volume but no definite shape.
   b) Has a definite shape but no definite volume.
   c) **Has Fast moving particles.**
   d) Has a definite volume and shape.

3. Which statement about the particle theory of matter is true?

a) **Arrangement of particles in matter determine the state of matter.**
b) When a solid melts, its particles no longer exist.
c) A solid object cannot move because its particles are at rest.
d) Particles in liquids are the farthest apart.

4. What happen when a liquid becomes a gas?

a) Particles slow down.
b) **Particles push away each other.**
c) Particles move closer together.
d) Particles make a pattern.

5. Butter melts because it.

i._____ heat and an ice cube melt because it. ii._____ heat.

a) i) Absorbs
   ii) Releases.
b) i) Releases
   ii) Absorbs.
c) **i) Absorbsii) Also absorbs.**
d) i) Releases ii) Also releases.

B. Match the column.

Column A	Column B
Melting	Conversion of liquid into vapours or gas.
Evaporation	Conversion of liquid into solid.
Condensation	Conversion of solid into a liquid on heating.
Freezing	Conversion of vapour to liquid.

C. put the following materials and object into the column of their natural state of matter.

Rock, Pepsi, smell of popcorn, air, nitrogen, water, rope, tomato, juice, football, vacuum cleaner, sand, rain, spoon, brick, wire, sweat, oxygen, smoke.

Solids	Liquids	Gases
Rocks, Rope, Football, Vacuum cleaner, Chicken, Sand, Spoon, Brick, wire.	Pepsi, Water, Tomato juice, Milk, Rain, Sweat.	Smell of popcorn, Air, Nitrogen, Hydrogen, Steam, Oxygen, Smoke.

D. Fill in the cross word.

1. Change of water vapour into water.
2. Change of ice into water on heating.
3. Change of water into gas on heating.
4. Change of substance from.

Liquid to solid state.

							E				
		M					V			F	
		E					A			R	
		L					P		.	E	
		T					O			E	
		I					R			Z	
C	O	N	D	E	N	S	A	T	I	O	N
		G					T			N	

							I			G	
							O			.	
							N				

E. SHORT QUESTION:

i. What is the mechanism through which solids convert into gases directly?

Answer;

When a solid absorbs sufficient energy, attraction between particles is completely finished, allowing particle to move further and thus converts into gases.

2) Choose any object of your choice, mention its state, and describe it in terms of particle theory of matter.

Answer:

Object: Brick.

State: Solid.

Description: Particles in brick are very much closed to each other. It has a fixed shape and volume. Force of attraction between particles is very large.

3.Describe the differences between movement of particles in liquids and gases.

Answer:

Particles in the liquids are in translatory and random motion while particles is in the gases are in random motion.

4. Are particles closer together in a solid liquid or in gas?

Answer:

Particles in a solid are very close together but in liquid and gas they are away from each other.

5. What happened to atom when heat is added to them?

Answer:

When heat is added to a substance then the atoms faster, and then a change of state occurs.

LONG QUESTIONS

1. Explain the particles theory of matter.

Answer:

Matter is made up of small particles. They are in constant motion. There are space between particles. Based on the arrangement of particles, matter can exist in three different states i.e solid liquid and gas.

2. In light of particle model, explain why does a balloon deflate slowly?

Answer:

As the surface stretches to inflate, the surface becomes so thin in some places that tiny, microscopic holes result. Air molecules are slowly diffuse, so the balloon deflates slowly.

3. Compare the free state of matter with examples.

Answer:

Solid: It has fixed shape and volume. Particles in solid are closely packed. Forces of attraction between particles are very strong.

Example: wood, iron, ice cube, etc.

Liquids: don't have fixed shape but take shape of container.

Particles in liquid are not close to each other as that of solids

Force of attraction between particles is small.

Examples: water, milk, honey etc.

Gases: it don't have fixed shape and volume.

Particles in gas are farther from each other.

Forces of attraction between particles is negligible.

Example: air, oxygen, hydrogen etc.

G STRUCTURED QUESTIONS.

Use the boxes given on the right side to draw the particle arrangement that will

1 Arab in a solid is changed to liquid. Write a name of the respective process in each arrow.

2. Describe the example of diffusion from your everyday life. Explain what is happening with the help of illustration in terms of particle movement.

Answer:

The smell of the roses flower in the garden is an example of diffusion. Particles has the ability to move from a denser place to rare place so diffusion is Escape of gas molecules from high concentration to lower concentration.

3. Complete the following with illustration and writing. First row is completed for you.

Answer:take figure from book page:64

State	heat gain/ heat loss	new state	example from daily life:
			to Ice on cold day or in Refrigerator.
liquid	heat gain	gas	Water evaporates from a Puddle or A pool during a hot summer day.
gas	heat loss	liquid	Conversion of vapours in air to water.
solid	heat gain	liquid	Melting of ice cream on a hot day.
liquid	heat loss	solid	Changing of water

F project work.

Make 2D model on a chart paper showing particles in three States of matter. Your project should include the following.

a. A description of the particle model.

b. A description of the particle behavior in solid, liquids and gasses.

Answer: Project work.

Phases of Matter Notes

Gases, liquids, and solids are all made up of microscopic particles, but the behaviors of these particles differ in the three phases.

Gas
Total disorder; most empty space; particles have complete freedom of motion; particles far apart

Liquid
Disorder; particles or clusters of particles are free to move relative to each other; particles close together.

Crystalline solid
Ordered arrangement; particles are decidedly in fixed positions; particles close together

UNIT#6
ELEMENTS AND COMPOUNDS

Words	Meanings

Element	عنصر
Ductile	تارپذیر
Alloy	بھرت
Dull	پھیکے رنگ۔ ہلکے رنگ
Utensils	برتن
Odour	بُو۔ مہک
Popular	جمہور۔ عوامی
Reactants	اشیائے متعاملہ
Latin	لاطینی
Malleable	پھیلنے والی
Sonorous	آواز والی
Brittle	خشک/ ٹوٹ کر ٹکڑے ہو جائے
Abundantly	کثرت سے
Dyes	رنگ
Explosives	دھماکا خیز
Products	مصنوعات / حاصلات

EXERCISE

MCQs (choose the correct option)

1. CO_2 is the chemical formula of carbon dioxide. What is the ratio of carbon and oxygen in carbon dioxide?
   a) 3:1
   b) 2:1
   c) 1:2
   d) 1:1
2. The symbol of Sodium is:
   a) Ni
   b) Ne
   c) N
   d) Na
3. Which of the following is an element:
   a) Carbon dioxide
   b) Water
   c) Copper
   d) Salt
4. Sugar is a compound of:
   a) Carbon, hydrogen, oxygen.
   b) Hydrogen, oxygen, sodium.
   c) Calcium, carbon. oxygen.
   d) Molecule, atom, compound.
5. Which of the following is a compound.
   a) Cl
   b) C
   c) NaCl
   d) O2
6. Sodium and chlorine combined to form
   a) Sand
   b) Chalk
   c) Sugar
   d) Salt
7. _____ is the combination of atoms.
   a) Atom
   b) Molecule
   c) Element
   d) Gas
8. What type of matter is made up by combining elements?
   a) Solid

b) Element
c) **Molecule**
d) Atom

9. Which of these is the correct symbol of aluminum?
a) **Al**
b) aL
c) AL
d) al

10. How many elements have been discovered so far?
a) 100
b) **118**
c) 112
d) 114

B. Match the columns by drawing arrows.

s.no	Column A	Column B
i	A substance that cannot be broken into simpler form.	Symbol. V
ii	Two or more elements join together chemically.	Metal. iv
iii	A substance is made up of two or more atoms.	Element. i
iv	Have a shiny surface.	Compound.ii
v	One or two letters used to represent an element.	iii

D. Short questions.

1. **Carbon is an element while carbon dioxide is a compound. Why?**

Answer

Carbon is an element as it consists of the same kinds of atoms. While carbon dioxide consist of oxygen atom and carbon atom. So it is a compound.

2. **Classify the following substances into elements and compounds.**

i) Mercury ii) Sulphur iii) Sugar. iv) water v) gold vi) salt vii) oxygen.

Elements: Mercury, Sulphur, Gold, Oxygen.

Compounds: sugar, water, salt.

3. **Write three uses of aluminum.**

Answer:

Three uses of aluminium are:
a. It is used in motor cars.
b. Is used in ships.
c. alumunium wire is used as electric wire.

4. **Give symbols of sodium, calcium, Cobalt, gold and mercury.**

Element	symbol
Sodium	Na
Calcium	Ca
Cobalt	Co
Gold	Au
Mercury	Hg

D LONG QUESTIONS.

1. Differentiate between elements and compounds. Elaborate your answer with an example.

Answer:

s.no	Element	Compound.
1.	Made of only 1 type of atom.	Made up of two or more different elements.
2.	Pure substances	Impure substances.
3.	Example:Hydrogen, iron, copper, etc.	Example: water, salt, carbon dioxide,etc.

2. Identify 5 compounds found at your home and write down their uses.

Answer:

Water: It is used for drinking, washing etc.

Table salt: It is used for taste and food preservation.

Sugar: It is used in food to make them tasty.

Soap: It is used for washing clothes, bathing and washing dishes.

Toothpaste: It is used for cleaning teeth.

3. Give the similarities and differences between metals and nonmetals.

Answer:

Similarities:

1) Both are elements.
2) Both have same atomic structure.
3) Both share electron.

Differences:

1) Metals are solid but nonmetals are soft.
2) Metals conduct electricity while nonmetals do not conduct electricity.
3) Metals are Shiny but nonmetals are dull.

E structured Questions:

Table given below shows the number of elements that are present in human's body. Most of them are nonmetals (keep help from the table)

Elements	symbol	Percentage.
Oxygen	O	65.0
Carbon	C	18.5
Hydrogen	H	9.5
Nitrogen	N	3.2
Calcium	Ca	1.5
Phosphorus	P	1.0
Potassium	K	0.4
Sulphur	S	0.3
Sodium	Na	0.2
Chlorine	Cl	0.2
Magnesium	Mg	0.1
Copper	Cu	Less than 1

a. Which the elements are most abundant in our body?

Answer:

Oxygen, Carbon, and hydrogen.

b. Identify the metals and mention the ones that have the

least and the most percentage in the human body.

Answer:

1) Least one is magnesium.
2) Most one is calcium.

c. **Identify the nonmetals.**

Answer:

Oxygen, carbon, hydrogen, nitro gen, phosphorus, Sulphur, chlorine.

d. **From the table can you identify the elements that exist in a gaseous state?**

Answer:

Oxygen, hydrogen, nitrogen, chlorine exist in gaseous state in human body.

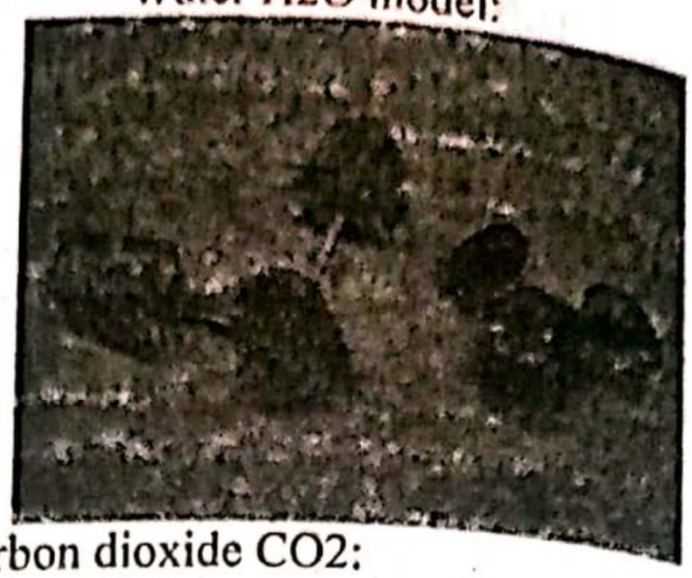
E project work.

Atoms are represented in colorful spheres, which makes it easy to study with (size will vary according to the size of atom)

1. Make a model of water (H2O), carbon dioxide (CO2), Methane (CH4).
2. Use different materials like colored plus 3 clay or Tennis balls.
3. Straw toothpicks to form bonds.

Answer:

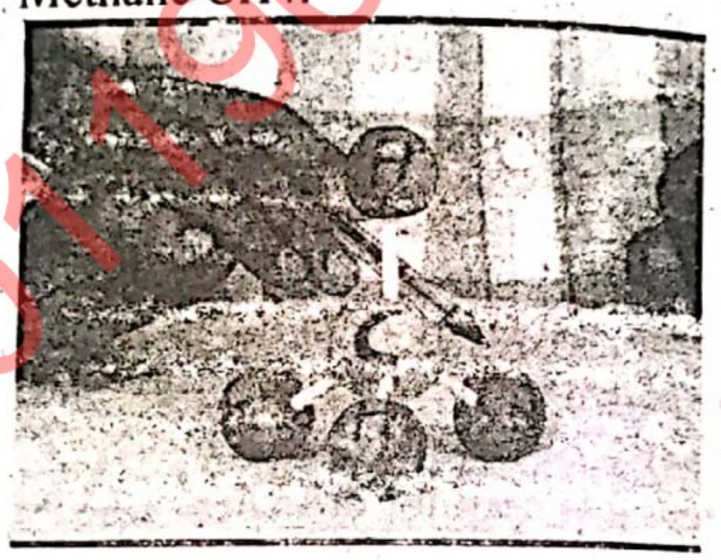
Water H2O model:



Carbon dioxide CO2:

Carbon dioxide

Methane CH4:



Make such models as Your Practical work.

UNIT: 7
MIXTURE.

Words	Meanings
Mixture	آمیزہ
Lemonade	شربتِ لیموں
Components	حصے
Corrosion	زنگ سے کھاجانے کا عمل
Vinegar	سرکہ
Sieving	چھاننا
Stirring	حل کرنا

Filtrate	چھاننا
Dyes	رنگ
Visible	نمودار۔جو نظر آسکے
Solution	محلول
Alloy	دھاتی مرکب
Utensils	برتن
Basket	ٹوکرا
Filtration	چھاننے کا عمل
Residue	بچا ہوا
Muddy	کیچڑ والا/گندہ/
Link	جوڑ

EXERCISE

A. MCQs (choose the correct options)

1. When sugar is mixed with water it becomes:
   a) Element
   b) Compound
   c) Alloy
   d) **Mixture**
2. The process used to purify oil is called:
   a) Evaporation
   b) **Distillation**
   c) Filtration
   d) Winnowing
3. Which one is not an example of alloy?
   a) Brass
   b) Steel
   c) **Iron**
   d) Bronze
4. The percentage of Nitrogen in Air is:
   a) 35%
   b) **78%**
   c) 87%
   d) 21%
5. The maximum amount of solute that can be dissolved in a solvent at specific temperature is called.
   a) **Solubility**
   b) Solution
   c) Concentration
   d) Mixture
6. Which of the following is property of a mixture:
   a) The substance lose their original properties.
   b) The substance are mixed in a fixed ratio.
   c) **The substance can be separated by physical methods.**
   d) Only one type of substance is mixed.
7. The solid particle which are left on filter paper while filtration are called.
   a) **Residue**
   b) Filtrate
   c) Solvent
   d) Salute.
8. Air is a mixture of different gasses. This combination is an example of:
   a) Chemical combination
   b) **No chemical combination**
   c) No physical combination
   d) Both physical and chemical combination
9. A mixture of sugar and grains is an example of :
   a) Homogenous mixture
   b) **Heterogeneous mixture**
   c) Colloids
   d) Solutions

10. Soup powder is mixed with water in this soup powder is an example of:

a) **Solute**
b) Solvent
c) Solution
d) Mixture

B SHORT QUESTIONS.

1. Give one example of mixture with the following combination one is done for you.

Liquid - liquid (vinegar in water)
Solid - solid (iron in carbon)
Liquid - liquid (Milk in water)
Solid - liquid (sugar in water)
Gas - liquid (co2 In soft drink)
Solid - gas(dust in air)

2. Which process would you see to separate the following?

a) Sand and water.
b) Alcohol and water.
c) Vinegar (a solution of Acetic acid (liquid) in water)

Answer:

a. Filtration.
b. Distillation.
c. Distillation / evaporation.

3. Why water is considered as a universal solvent?

Answer:

Water is a good solvent and it can dissolve a wide range of solutes. Due to this quality water is considered as a universal solvent.

4. Can we use a poly bag for filtration, if not why?

Answer:

A polythene bag is not used for filtration because it is not porous. Liquid particles will not pass through polythene bag.

5. Why air is considered a mixture and not a compound?

Answer:

Air can be separated into components such as oxygen, nitrogen etc by fractional distillation. That is why air is a mixture and not a compound.

6. Identify substances in the following table.

Mixture:	Is this a heterogeneous mixture or a substance:
oil and water.	Mixture
flour and water	Solution
milk and water	solution
honey and water	solution
Orange juice.	solution

C) LONG QUESTIONS.

1. Explain the Different separation techniques to get a pure substance from a mixture.

Answer:

1. **Hand sorting:** it involves separation of different substances by hand.
2. **Sieving:** when we sieve the materials with different sizes of particles, the smaller particle will fall through the sieve and the largest particle will stay in the sieve.
3. **Filtration:** it is method of separating an insoluble solid from a liquid.
4. **Chromatography:** it is used to separate the mixture into its components by using filter paper.

2. Why the process of filtration cannot be used for separating soluble solids.

Answer: Solute is a substance that gets dissolved in the solvent. Since it is dissolved in the solvent, it cannot be separated by the process of filtration.

D PROJECT WORK.

Take a mixture of salt and sand. Perform an experiment to separate the Salt from sand.

Answer:
First dissolve the sand and salt mixture to water to make a solution than perform the below experiment.

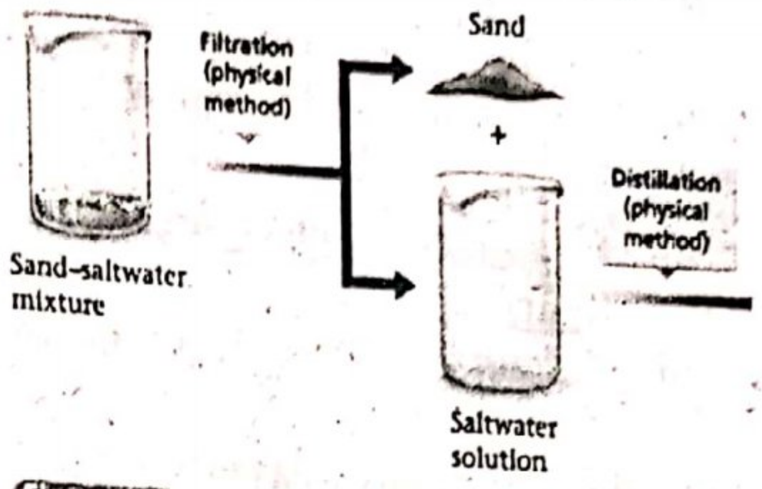


Figure 3.9

UNIT# 8

ENERGY.

Words	Meanings	Words	Meanings
Energy	توانائی	Ability	قابلیت/اہلیت
Task	ذمہ داری	Kinetic	حرکی
Potential	امکان/مخفی	Elastic	لچکدار
Nuclear	جوہری	Renewable	درجہ حرارت
Thermal	حرارتی	Replenish	پورا کرنا۔
Turbine	چرخاب	Radiation.	شعاعیں
Biomass	حیوی کمیت	Temperature	دوبارہ استعمل کے قابل

Exercise:

a. MCQs (choose the correct options)

1. Which of the following is a nonrenewable resource?

a) Wind
b) Water
c) wildlife
d) **natural gas**

2. Rida let a matchstick, what form of energy did she used?

a) Electrical
b) **Chemical**
c) Elastic
d) Light.

3. Kamran is sitting motionless on a chair: his kinetic energy is.

a) Minimum
b) Maximum
c) **Zero**
d) Twice

4. When ice is melting down what type of energy is melting it?

a) Electrical
b) **Thermal**
c) Chemical
d) Light

5. Energy used to cook food in microwave oven is a form of:

a) electrical energy
b) **thermal energy**
c) elastic energy
d) light energy

6. Which of the following energy conservation takes place in battery operated flashlights?

a) Electrical — mechanical — Light.
b) Chemical — mechanical — light.
c) **Chemical — electrical — light.**
d) Terminal — electrical — light.

7. Fossil fuel is regarded as an energy source which is:
a) Renewable
b) **non renewable**
c) Generating
d) Producing.

8. If you are using Biomass as a source of energy you might be heating with.
a) Coal
b) Natural gas
c) Petroleum
d) **Wood**

9. Of the following choices, which is best described or defines electrical energy.
a) **moving charge**
b) moving water
c) electric meter
d) Light source.

10. Which of the following has nothing to do with hydro power?
a) **Burning**
b) Gravity
c) Sun
d) water cycle

B. True or false (correct the statement if it is false)

1. Moving car is an example of potential energy. **False.**
Correct: moving car is an example of kinetic energy.
2. In Thunderbolt the elite energy is converted into sound in electrical energy. **False.**
Correct: In thunder bolt electrical energy is converted into light and sound energy.
3. We get energy from petrol to move a car. **True.**
4. Coal is a renewable energy source. **False**
Correct: coal is a non-renewable energy resource.
5. A loose spring possesses elastic potential energy. **False.**
Correct: a compressed spring possesses elastic potential energy.

C SHORT QUESTIONS

1. How is potential energy stored in an object? Give one example.

Answer:
Potential energy is stored in an object due to its position. When an object is raised to a certain height then it stores potential energy and uses kinetic energy.

2. Suppose you drop a ball. It bounces a few times and then stops. Does energy disappear? Explain your answer.

Answer:
When we drop a ball. Then the energy does not disappear but changes from one form to another i.e; from potential energy to kinetic energy.

3. How are renewable energy resources environmental friendly?

Answers:
Renewable energy sources are environment friendly because it does not produce greenhouse gases and reduce some types of air pollution.

4. Can a body possess energy even when it is not in motion. Explain your answer with an example.

Answer:
Yes a body possess energy even when it is not in motion. For example a book lying on the table possesses potential energy.

5. **Why does most of energy we use come from non-renewable energy resources?**

Answer:

Non-renewable energy is a primary source of energy. Most of energy comes from fossil fuel. Fossil fuel are energy rich and cheap to process.

D LONG QUESTIONS.

1. **What do you understand by the term "energy". Also write the name of different forms of energy.**

Answer:

The ability to do work is called energy. Energy is required to do different types of work.

Different types of energies are:

1) Kinetic energy.
2) Potential energy.
3) Chemical energy.
4) Nuclear energy.
5) Light energy.
6) Sound energy.

2. **What is potential energy? Give one example of a body that has potential energy. in each of the following:**

1. due to its position.

2. due to its state.

Answer:

The energy of a body due to its position is called Potential energy.

Example:

1. due to its position: a brick laying on the roof of a house has potential energy.
2. Due to its state: a stretched rubber band has potential energy.

3. **A basket full of water is on the first floor of your house and another identical basket with the same quantity of water is kept on the second floor. Which of the two has greater potential energy? Justify your answer.**

Answer:

Potential energy of a body depends upon its height. Since second floor has greater height than the first floor. So a bucket full of water on the second floor has greater potential energy than the bucket of water on the first floor.

4. **State and discuss the law of conservation of energy. Give one example showing the conversion of potential energy to kinetic energy when put in use.**

Answer:

This law states that one form of energy is converted to another form but the total energy remains constant. The Falling of a stone from a certain height is an example of conversion of energy from potential energy to kinetic energy.

E STRUCTURED QUESTIONS:

1. Wind is blowing across a windmill. The wind mill is converting energy in wind to electrical energy. After passing through the windmill, will there be any reason change in the speed of the wind. Why?

Answer: yes, the speed will decrease because some of its energy is converted into rotating wheel of wind mill.

See diagram on book page number: 110

2. The diagram shows water flowing from a tank through a faucet and rotating a wheel.

See diagram on textbook page: 110

a. **What kind of energy does the water have when it is in the tank?**

Answer:

Potential energy.

b. **What kind of energy does the water have just before it hits the wheel?**

Answer:

Kinetic energy

c. Suggest one change to the system that will make the wheel rotates faster.

Answer:

Remove the faucet and allowed the whole water to fall on the wheel.

3. A Biker is going from rest at position:

1. The diagram shows the bike in four position as he or she move along a track from left to right.

a. In which position does the biker have minimum kinetic energy and maximum potential Gravitational energy? Why?

Answer:

Minimum kinetic energy at point 4 and maximum potential energy at point 1. See Diagram Textbook page 110

b.In which position does the biker have minimum gravitational potential energy and maximum kinetic energy? Why?

Answer:

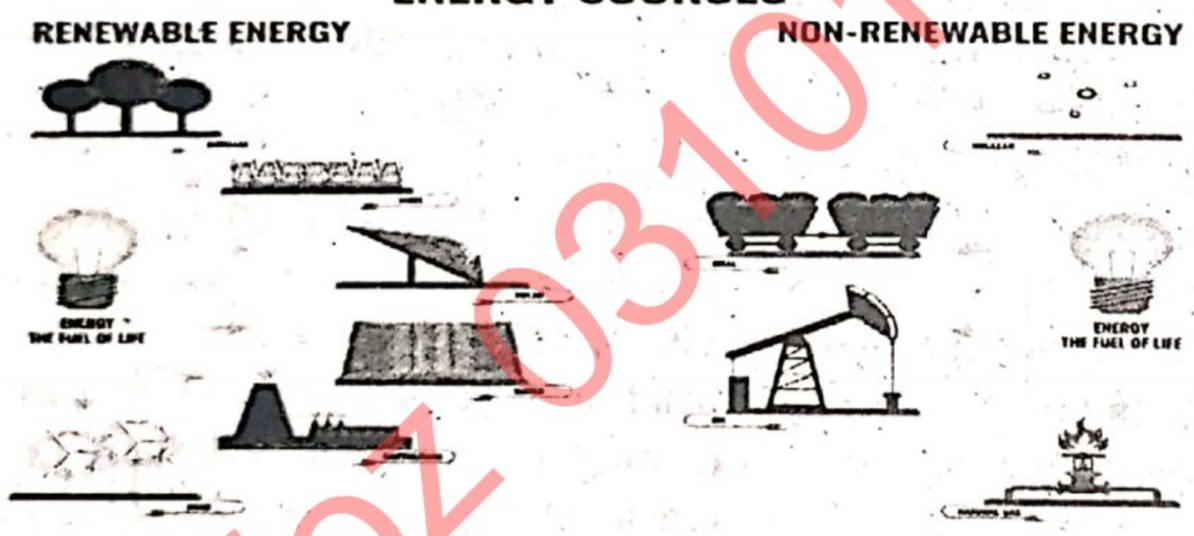
Minimum gravitational potential at point 3 and maximum kinetic energy at point 2. See diagram in textbook page number: 110

F. PROJECT WORK.

Make a poster of comparison of renewable and nonrenewable energy sources.

Answer:

Practical work:



UNIT: 9
ELECTRICITY

Words	Meanings	Words	Meanings
Magic	جادو	Current	برقی رو
Rub	رگڑنا	Blanket	کمبل
Conductor	موصل	Induction	آغاز
Circuit	چکر	Insulator	غیر موصل
Clothespin	چٹکی	Buzzer	سیٹی
Wrap	تہ کرنا۔لپیٹنا۔ڈھکنا	Foil	محراب دار
Parallel	متوازی	Series	سلسلہ
Fairy	پری	Interrupted	مداخلت
Appliances	آلہ	Static	سکونی

Exercise

MCQ (choose the correct option)

1. Cell is a device which converts:
   a) **Chemical energy into electrical energy.**
   b) Electrical energy into light energy.
   c) Electrical energy into magnetic energy.
   d) Light energy into electrical energy.
2. A battery is a:
   a) A single cell
   b) **A combination of cells in which cells are joined (+) to (-).**
   c) A combination of cells in which cells are joined (+) to (+).
   d) Unlimited supply of electrical energy.
3. A substance that allows electricity to pass through it is called:
   a) **A conducted.**
   b) An insulator.
   c) Semiconductor.
   d) Superconductor.
4. All of the following are examples of conductors except:
   a) Tape water.
   b) Salt solution.
   c) Metal wire.
   d) **Plastic.**
5. Choose the correct direction of current:

C is the correct option.

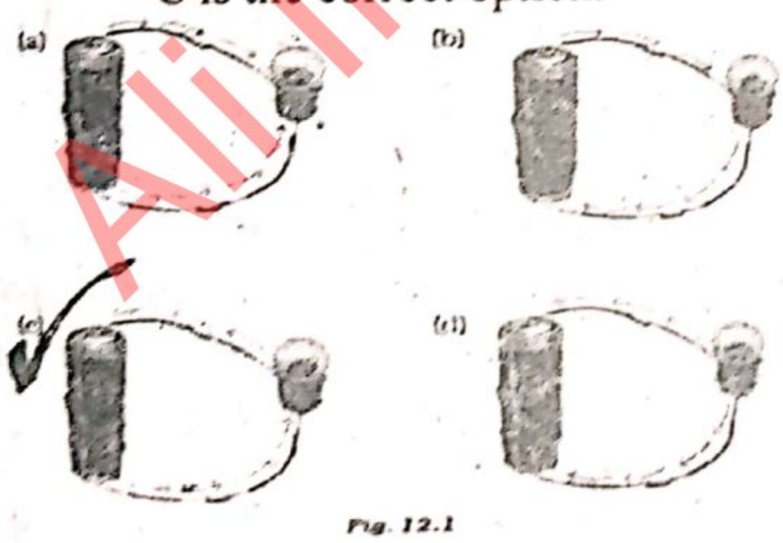


Fig. 12.1

6. Body is negatively charged then it has:
   a) **Excess of electrons**
   b) Excess of protons.
   c) Deficiency of electrons
   d) Deficiency of neutrons
7. Adding more Bulbs to a circuit with one battery would.
   a) Make them brighter
   b) Make them sharper
   c) **Make them dimmer**
   d) Make them colorless.
8. Cell is a device that converts:
   a) **Chemical energy into electrical energy.**
   b) Electrical energy into light energy.
   c) Electrical energy into magnetic energy.
   d) Mechanical energy into light energy.
9. _____ is an electric device which easily closes or opens an electric circuit.
   a) Filament.
   b) Electric bulb.
   c) **Electric switch.**
   d) Electric cell.
10. Bulb glows only in:
   a) **Closed circuit.**
   b) Open circuit.
   c) In both circuit.
   d) Open circuit if bulb is not fused.

B. Match the following items given in column A with that in column B.

S. no	Column A	Column B
1	Cell	Allow electricity to pass through it.3
2	Battery	Eigther breaks or completes a circuit.5
3	Conductor	Convert electricity to light.6
4	Insulator	A combination of cells.2
5	Switch	A device that produce electricity.1
6	Bulb	Is a path of electricity. 7
7	Circuit	Does not allow electricity to pass.4

C. SHORT QUESTION:

1. What is static electricity?

Answer:

Change at rest is called static electricity.

2. What is current electricity?

Answer:

Change in motion is called current electricity.

3. How many types of charge are there?

Answer:

There are two types of charges.
Positive charge.
Negative charge.

4. Which electrical appliances we use daily?

Answer:

We use the electric clock, the AC, the refrigerator, the telephone etc. daily.

5. Why does a cell stop producing electricity after some time?

Answer:

An electric cell produces electricity from chemicals stored inside it. When the chemical inside the cells are used up, the cell stop producing electricity.

6. Explain how bulb glows in circuit when it is connected to an electric cell?

Answer:

When the therminal of the bulbs are connected to electric cell then the current flow through the filament of the bulb. This makes the bulb glow.

7. What is the purpose of using an electric switch?

Answer:

Electric switch is used in a circuit to open or close the flow of current.

8. What is an electric circuit?

Answer:

It is a complete path around which electric current can flow.

9. What electrical device will be used in electric circuit to glow a bulb?

Answer:

Electric circuit consists of

1) Battery or Cell.
2) Wire
3) Bulb
4) Switch

10. What is a cell?

Answer:

Cell is a device which converts chemical energy to electrical energy.

11. What is an open electric circuit?

Answer:

When the switch is open, then current does not flow is called an open circuit.

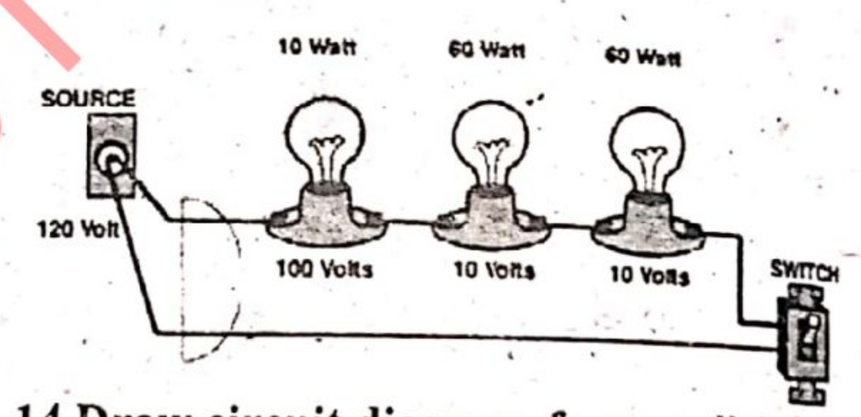
12. What is a closed electric circuit?

Answer:

When the switch is closed, then the current flows and is called a closed circuit.

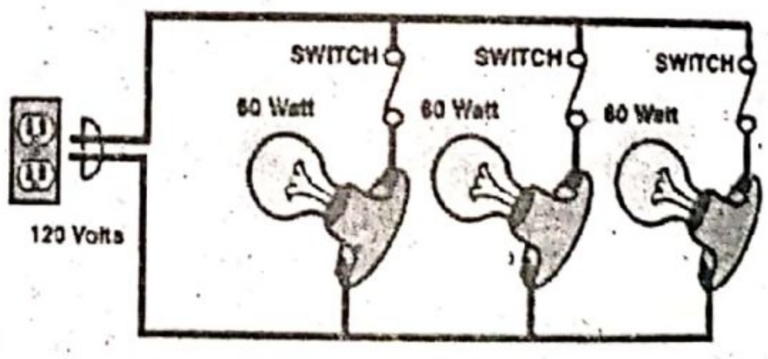
13. Draw circuit diagram from series combination of three bulbs.

Answer:



14.Draw circuit diagram for parallel combination of three bulbs.

Answer:



D LONG QUESTIONS:

1. **Explain why it is not safe to go with an umbrella when there is heavy rain, lightening or thunder.**

Answer:

Heavy rain and thundering is accompanied by lightning. Lightning is the discharge of a huge amount of charges. These

charges may pass the metallic rod of the umbrella.
Hence the person may get sever electric shock and die.

2. How many types of charges are there? So discuss the characteristics of like and unlike charges.

Answer:

There are two types of charges.

1) positive charge
2) negative charge

Like charges always repel each other.
Unlike charges always attract each other.

3. What is electric circuit? Draw and discuss series and parallel combination of the electric circuits.

Answer:

It is a complete path around which electric current can flow. When there is one path for flow of current then it is called series combination. And if there is a different path for the flow of current then it is called a parallel combination.

4. Draw and discuss the components of an electric circuit for the flow of charges.

Answer:

a) **Battery or Cell:** it pushes the charges around this circuit.
b) **Wire:** conducting material that allow charges to flow through the circuit.
c) **Source:** device that convert electricity to other form.
d) **Switch:** it is used to connect or disconnect circuit.

E. STRUCTURED QUESTIONS.

1 Two plastics electrically charged spherical objects A and B are hung side by side. The given below table shows the charges given to each wall into separate experiments. What will be the effect of these objects?

Experiment no	charge on ball A	charge on wallpaper	Attract or repel.
1	positive	negative	Attract.
2	negative	negative	Repel.

2. In which of the following circuits this will be used up rapidly? Explain.

Answer:

Take diagram from book page # 124.

A B
C

Answer: In diagram C. The cell will be used up rapidly because this is a series circuit.

3.In the following arrangement, the bulb will not glow if A and B are connected with.

Take diagram from book page 125.

a) A Steel spoon
b) A plastic clip
c) A copper wire
d) A silver spoon

4.Explain your answer with reason.

Answer:

Bulb will not glow if A and B are connected to a plastic clip because plastic do not conduct electricity.

4. Examine each of the following given circuits. State whether it is in series or parallel. Explain.

Take diagram from book page# 125.

Answer:

a)Series because there is only one path for flow of current.
b) Parallel because there are two parts for flow of current.
c) Parallel because there are two parts for flow of current.
d) Series because there is only one path for flow of current.

5. Think of six activities that use electric current and also name the device that is used to perform activity.

Activity you perform	device
Get light	Torch.
Get heat	heater
cooling	refrigerator
cooling	air conditioner
get air	fan
get electricity	electric

	generator
rotation	motor

F. project work.

Run a competition for saving electricity in your surroundings.

Answer:

Make groups deliver speech and tell people how to use natural resources and avoid use of electricity or use less electricity.

Practical work.

UNIT 10
MAGNETISM

Words	Meanings	Words	Meanings
Magnetism	مقناطیسیت	Compass	پرکار/قطب نما
Sprinkle	چھڑکنا	Loop	دائرہ/حلقہ
Giant	غیر معمولی جسامت کا/دیو	Pole	قطب۔سرا
Float	تیرنا	Retain	بچالینا
Behave	پیش آنا	Vanish	مٹ جانا
Alternating	نوبت ظاہر ہونا	Coil	تار
Space	خالی جگہ/خلا	Hammering	زبردست حملہ کرنا/ زور سے مارنا
North	شمال	South	جنوب

EXERCISE:

MCQs (choose the correct option).

1. Which of the following gets attached to a magnet?
   a) Copy book
   b) Silver spoon
   c) Comb
   d) **Common pins**

2. The pole of a magnet that points words the geographical South is called:
   a) North Pole
   b) **South Pole**
   c) East pole
   d) West pole

3. When a bar magnet is brought near iron dust, most of the dust sticks.
   a) Near the middle
   b) Equally everywhere
   c) **Near two ends**
   d) At the middle and ends.

4. A freely suspended bar magnet Rests in:
   a) **North-South direction.**
   b) East- west direction.
   c) Upside down.
   d) Any direction by chance.

5. Attraction is seen between poles of two bar magnets in the case of:
   a) North pole of one magnet with north pole of other.
   b) **North Pole of one magnet with South Pole of other.**
   c) South Pole of one magnet with South Pole of other.
   d) All of these cases will show attraction.

6. Suspended magnet rests in:
   a) East- west direction.
   b) **North south direction.**
   c) North east direction.
   d) North West direction.

7. Which of the following materials is the most suitable for making a permanent magnet.
   a. Soft iron.
   b. **Nickel.**
   c. Copper
   d. Steel.

8. Magnetic lines of force of a bar magnet do not intersect because:
   a. The lines have similar charges from a single point.
   b. The lines always debate from a single point.
   c. **A point always has a single net magnetic field.**
   d. The line needs magnetic lenses to intersect.

9. Which of the following processes cannot destroy magnetic properties of magnet.
   a) Hammering
   b) Heating
   c) **Dropping of a hard surface**
   d) Boiling

10. The purpose of a compass?
   a) **To tell you directions.**
   b) You tell how far you have walked.
   c) To tell what time you left.
   d) Tell you where the sun is.

B. SHORT QUESTIONS.

1. **What is a magnet?**
   Answer:
   A magnet is a material or object that produces a magnetic field.

2. **What is magnetic field?**
   Answer:
   It is the space around the magnet where the magnetic force is felt by another magnet.

3. **How can we detect magnetic field?**
   Answers:
   We can detect magnetic field by placing a compass at that place.

4. Current is passing through any wire. How can magnetic fields be detected around wire?

Answer:

By placing a compass on a current carrying wire we can detect the magnetic field.

5. From which pole of a Magnet field lines will originate and terminate outside the magnet?

Answer:

Magnetic field lines originate from North Pole and terminate on South Pole.

6. Differentiate between permanent magnet and temporary magnet?

Answer:

A permanent magnet retains its magnetic properties in the absence of magnet or current.

Temporary magnet lose their properties in absence of magnet or current

C) LONG QUESTIONS:

1. What do you understand by magnetic power and discuss briefly will magnet lose their power with time?

Answer:

Ability of a magnet to attract magnetic materials is called magnetic power.

Magnet lose their power by the following method:

Heating: On heating magnet lose their magnetic properties.

Hammering: Repeated hammering weakes the Magnetic strength of a magnet.

2. How many poles of magnets are there and how can you tell which is not for south pole if it is not marked?

Answer:

There are two poles of a magnet.

a) North Pole
b) South Pole

We can determine the north or South Pole of a magnet by placing it with a compass.

3. Describe an experiment to illustrate that like poles repel while the unlike attract.

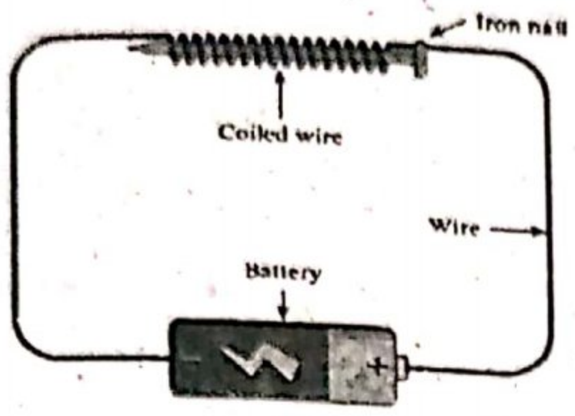
Answer:

Take two bar magnets a and b suspend one magnet a with a Silk thread from Support so that it is free to swing in the north south direction, The magnet will come to rest. The north pole of magnet is in the north and the South Pole of the magnet is in the south direction. This experiment show that like poles repel and unlike poles attract each other.

4. Explain in your own words, how to make an electromagnet. Draw a labelled diagram to show the circuit of the electromagnet.

Answer:

Take a nail and wound a wire around it tightly. Link the ends of this wire to respective terminals of the battery. Switch on the battery the current will flow through the wire and the compass needle will show the deflection this arrangement is called electromagnet.



See the diagram book page number 132 figure 10.9

D STRUCTURED QUESTIONS.

1. How temporary magnet can be designed?

Answer:

It is made of soft iron. It the design by placing them in strong magnetic field.

2. What is electromagnet?

Answer:

The magnet formed by passing electricity through a wire is called electromagnet.

3. What are applications of magnet?

Answer: It is used in electric motors, generators, door bells, Speaker etc.

4. How can you magnetize a magnetic material?

Answer:

When a magnet is rubbed with the magnetic material like needle or iron piece then it is magnetized.

5. What is demagnetization?

Answer:

Removing the magnetic properties from a magnet is called the demagnetization.

6. How many methods are there for the demagnetization of magnet?

Answer:

There are three methods for the demagnetization of magnets:

1. Heating.
2. Hammering.
3. Electrical method.

7. A Tailor is stitching buttons on his shirt, Middle has slipped from his hand on the floor how can you help the tailored to find the needle.

Answer:

We can help them by giving a magnet to them.

E. Project work.

By using magnetic materials try different methods of magnetization and demagnetization.

Answer:

Practical work.

UNIT 11
TECHNOLOGY IN EVERYDAY LIFE.

Words	Meanings	Words	Meanings
Gardening	باغبانی	Curdle	دودھ کا جمنا
Yard	گز	Vital	بقائے حیات

Pots	برتن	Balcony	چھجا
Drainage	پانی کی نکاسی	Barrel	بندوق کی نال
Essential	ضروری	Fertilizer	کیمیاوی کھاد
Compost	مخلوط کھاد	Synthetic	ترکیب
Yogurt	دہی	Incubate	انڈے سینا
Whey	دودھ کا پانی	Cheese	پنیر
Secure	محفوظ	Saucepan	گول دھات کا برتن

EXERCISE

MCQ (choose the correct option)

1. The effective condition for solar oven is:
   a) Cloudy
   a) **Sunny**
   b) Windy
   c) Wet.

2. The material used in making of solar oven is:
   a) **Low cost**
   b) Expensive
   c) Low cost in efficient
   d) Expensive efficient

3. The main ingredient of yogurt is:
   a) **Milk**
   b) Sugar
   c) Cream
   d) Egg.

4. Fruits, vegetables, peelings, egg shells are all examples of what type of fertilizer?
   a) Chemical
   b) **Organic**
   c) Inorganic
   d) Pesticides

5. How does a fertilizer help in plant growth?
   a) Make them grow
   b) **Replenish nutrition in the plant.**
   c) Stunted growth
   d) Discoloration

6. A path along which electric current flows is a:
   a) Bulb
   b) Conductor
   c) Insulator
   d) **Circuit**

B. SHORT QUESTIONS:

1. Why do plants need fertilizer?

Answer:

Fertilizers provide essential nutrients that make plant healthy. It also help in growth of the plant.

2. Define compost.

Answer:

It is the recycling of organic wastes, such as vegetable peels, Waste food and leaves by buring them in compost pits.

3. English the components of a simple circuit.

Answer:

Components of circuit are resistor, capacitor, switch, wire, inductor etc.

4. Solar oven takes longer time to cook as compared to the conventional method. Why?

Answer:

Solar oven takes longer time due to factors of strong wind and air temperature.

5. What is Coagulation?

Answer:

It is the process by which flood changes from a liquid to a gel, forming a blood clot.

6. Why do we use fermentation process?

Answer:

Fermentation is used for reservation in a process that produce lactic acid found in such source foods are pickled, cucumber, kimchi, and yogurt.

C LONG QUESTIONS.

1. Write down the steps of making yogurt and cheese.

Answer:

Yoghurt:

1. Take two cups of milk in a pot and boil it for half an hour to sterilize it.
2. Let it cool to room temperature.
3. Add a spoon of yogurt in the mailk.
4. Mix it well.
5. Cover the pot with the towel and incubate it until it sets.
6. Open it after incubation and see the result.

Cheese:

1. Prepare the milk.
2. Acidify the milk.
3. Curdling the milk.
4. Cutting the curd.
5. Draining the whey.
6. Salting the cheese.

2. Define solar oven? Write down steps to make solar oven from a low-cost material.

Answer:

Solar oven is a device which uses the energy of direct sunlight to heat, cook or drink and other food materials.

Steps to make solar oven:

1. Create an insulation chamber.
2. Construct a lid to fit oven the top of the bigger box.
3. Line the box with foil to reflect sunlight into your box, and insulate with paper in order to to trap heat.
4. Set up your own.

D PROJECT:

1) Ali and Sara were growing plants in the pots. Early used organic fertilizer for plant why Sarai used chemical/ inorganic fertilizer for her plant. Plant will grow better and why?

Answer:

Chemical fertilizer is best over organic fertilizer, so Sara plant will grow better. Chemical fertilizers are rich equally in all three essential nutrients,nitrogen,. phosphorus and potassium.

A) Write down a report on environmental problem caused by the excessive use of fertilizers.

Answer:

Excessive use of fertilizers lead to eutrophication. Fertilizer contains substances including nitrates and phosphorus that are flooded into lakes and oceans through rains and sewages these substance boost the Excessive growth of algae in water bodies and thus decrease oxygen level for aquatic life.

2. You are provided with the following materials.

1. A packet of yeast.
2. Empty water bottle.
3. A balloon.
4. 1 Cup of warm water.
5. 2 table spoon of sugar.

Directions:

A) Mix water, east and sugar in the bottle.

B) First in the balloon on the top of the bottle.

A) Try this experiment using different combination.

Answer:

A) Mix water in yeast.

Ans: Mix water and sugar.

B) Try cold water.

Ans: cold water will not dissolve yeast and sugar easily.

C) Try no sugar.

Ans: water in the yeast will be mixed.

D) Label is and record your result.
Ans: gas produced in the balloon.
E) What will happen if you will leave the sugar?
Ans: in absence of sugar taste of this mixture will be bitter.
F) What would happen if you will use cold water?
Ans: then the water and yeast will not dissolve easily.
G) What is the gas inside the balloon?
Ans: carbon dioxide.
H) Why do we use yeast and baking bread?
Ans: yeast not only leaves dough and gives it a light sponge like texture. It provides flavor Aroma and contributes to the nutritional value of bread.
3. You are provided with the following material.
Answer:

1. A bulb
2. A switch
3. Copper wire

Connect the given material so that the bulb light up.

E) Draw the picture of the circuit.

4. What would happen if we join two batteries?
Answer:
If we join two batteries in the same order then the bulb will light.
5. Does the same rule apply in machines who lived the cars if yes elaborate your answer.
Answer:
Yes, same rule apply in machines who lift the car because battery do works.
See diagram on textbook page: 154
6. Enlist how many energy resources are misused in our daily life and brainstorm actionable steps you would take as responsible citizens.
Answer:

1. For even most in significant errands, they use either bike or car, thus Leading to wastage.
2. Make electricity more efficiently.
3. Use more renewable energy.
4. Avoid single use plastics.
5. Drive less.

UNIT 12
SOLAR SYSTEM.

Words	Meanings	Words	Meanings
Planet	سیارے	Orbit	مدار
Diameter	قطر	Characteristic	خصوصیت
Volume	حجم	Criteria	اصول/معیار
Dwarf	بونا۔پست قد	Gravity	کشش ثقل
Binocular	دوچشمہ	Telescope	دوربین
Rock	چٹان	Debris	ملبہ

Celestial	آسمانی	Incandescent	روشن
Stuck	دار	Purpose	مقصد
Launched	شروع کیا	Communicate	آگاہ کرنا/خبر دینا/اطلاع دینا

EXERCISE

Mcqs(choose the correct option)

1. What holds the planets in their orbits around the sun?
   a) **Gravity**
   b) Speed
   c) String
   d) Air currents
2. The largest planet in the solar system is known as
   a) Uranus
   b) Saturn
   c) **Jupiter**
   d) Earth
3. Balls of ice, does, rocks and gases form these:
   a) Asteroids
   b) Meteorites
   c) **Comets**
   d) Meteors
4. Pluto was once called a planet in 2006, it was classified with other nearly round bodies whose objects cross the path of other bodies what term describes Pluto?
   a) Meteor
   b) **Dwarf planet**
   c) Asteroid
   d) Comets
5. What makes the sun more important than other stars?
   a) Unlike other stars, the sun is very large.
   b) When compared to other stars the sun is the hottest.
   c) Unlike other stars, the sun is the right color of living things.
   d) **When compared to other stars, the sun is very close to earth.**
6. Which of the following is the correct order?
   a) Mercury Mars Venus Jupiter
   b) **Mercury Venus Earth Mars**
   c) Mars Venus Jupiter Saturn
   d) Venus Earth Jupiter Saturn
7. What is the position of Mars from Sun?
   a) Second
   b) Third
   c) **Fourth**
   d) Fifth.
8. A small solid Rock travelling through the atmosphere is known as:
   a) **Meteor**
   b) Comet
   c) Star
   d) Asteroid

B. True and false (correct statement if it is false)

1. The sun is a star. **True.**
2. Earth has many moons. **False.**
   Correct: earth has only one moon.
3. The four planets closest to the sun are called the outer planets. False.
   Correct: the four planets closest to the Sun are called the inner planets.
4. Asteroids are Icy objects that revolve around the earth. **False.**
   Correct: asteroids are icy objects that revolve around the sun.
5. There are nine planets in the solar system. **False.**
   Correct: there are 8 planets in the solar system.

C SHORT QUESTIONS:

1. Into which two main groups can the planets in our solar system be classified? Describe two features of each group.

Answer:

Two main groups of solar system are:

1. Planets:

It revolves around the sun.
Gravity hold them in their orbits.

2. Dwarf planets:

They are smaller bodies than planets it is not a moon.

2) What is an asteroid?

Answer:

It is an object larger than meteoroid that revolves around the sun and is made of rock or metal.

3) Describe a meteoroid.

Answer:

Meteoroid is a solid piece of debris from an object which originates in outer space.

4) What is difference between planet and dwarf planets?

Answer:

A planet is a celestial body that revolves in an Orbit around the sun. Dwarf planets are natural objects outside of earth atmosphere.

5) Why is son considered as a star?

Answer:

Sun is a star because it produces energy by fusion reaction of helium turning into hydrogen.

6) Which planet of solar system has people, plants and animals? Why?

Answer:

Earth as people, plants and animals.
Because it is just the right distance away from the Sun to allow the right amount of air, water and heat to support life.

7) What are dwarf planets and what do they have in common?

Answer:

Dwarf panels are natural objects outside of Earth's atmosphere. There are five dwarf planets in solar system. These are the same as normal planets just smaller.

8) pick a planet (other than earth) and describe five characteristics that you know about it, be as specific as possible.

Answer:

Planet Jupiter:

1. It is massive than all other planets.
2. Fastest spinning planet.
3. Has Great Red spot.
4. Has rings.
5. Have 67 moons.

D LONG QUESTIONS:

1. What is the solar system? Write the names of Planets of the solar system in sequence.

Answer:

The sun and the cluster of bodies around it make up our solar system.

There are 8 planets in our solar system. These are:

1. Mercury
2. Venus
3. Earth
4. Mars
5. Jupiter
6. Saturn
7. Uranus
8. Neptune

2. Discuss the utilization of artificial satellite in daily life.

Answer:

Uses of artificial satellite are:

1. Research satellites measures major properties of outer space.
2. Weather satellite predict the weather.
3. Communication satellite provide worldwide link for mobile, radio and television.
4. Earth observation satellites Map and display our planet's resources.

3. What is importance of sun in our solar system? Assume the distance between the Earth and the Sun becomes

half of its present distance. What is likely to happen to live?

Answer:

The sun is an ordinary star, one of about hundred billion in our Galaxy, the Milky Way. It drives weather, ocean currents, seasons and climates, and make plant life possible through photosynthesis. If the distance between the sun and earth becomes half then the temperature of earth will increase, and the life become Impossible on earth.

4. Differentiate between stars and planets.

Answer:

Stars:

1. Stars are dot shaped.
2. It has its own light.
3. Stars twinkle.
4. Stars have very high temperature.

Planets:

1. Planets are spherical. Planets get flight from stars.
2. Planets do not twinkle.
3. Planets have low temperature.

E STRUCTURED QUESTIONS.

1. Solve the riddles.

1) I am between earth ____and but I am not Mars. Which planet am I. **Jupiter.**

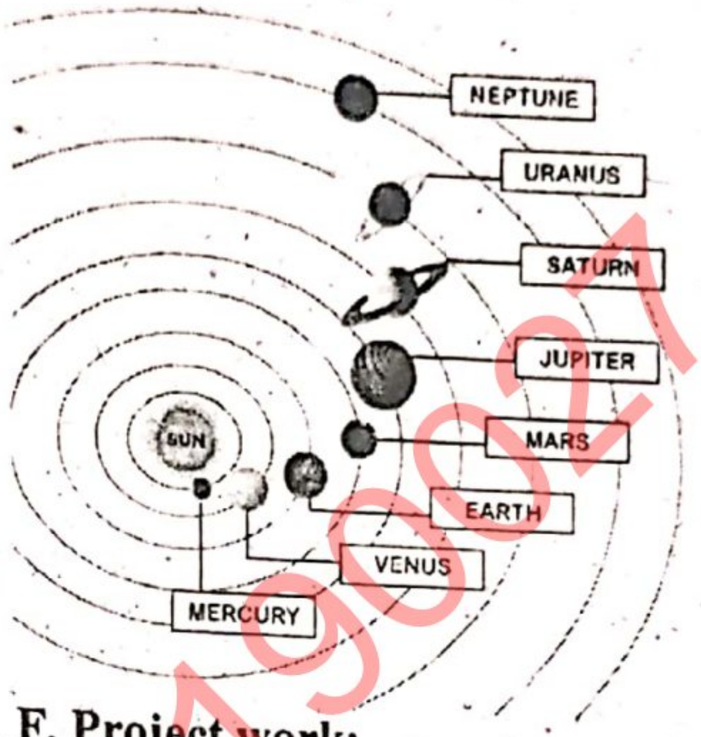
2. Human are constantly working on me which Planet am I. **Earth**

3. I have a huge "red spot" on me which planet am I. **Jupiter.**

4. I have many rings. I am located between Jupiter and Neptune but I am not Uranus, which planet am I. **Saturn.**

5. I am between Venus and Jupiter. Which planet am I? **Earth, mass.**

2. Label the names of planets.



F. Project work:

Make model of any satellite by using recycled materials.

(Group work)

Answer:

Practical work.

_____

_____.