

NCERT Solutions for Class 8 Science Chapter 1

Crop Production and Management Class 8

**Exercise : Solutions of Questions on Page Number : 13**

**Q1 :**

Select the correct word from the following list and fill in the blanks. float,

#### **water, crop, nutrients, preparation**

- (a) The same kind of plants grown and cultivated on a large scale at a place is called \_\_\_\_\_.
  - (b) The first step before growing crops is \_\_\_\_\_ of the soil.
  - (c) Damaged seeds would \_\_\_\_\_ on top of water.
  - (d) For growing a crop, sufficient sunlight and \_\_\_\_\_ and \_\_\_\_\_ from the soil are essential.

**Answer :**

- (a) The same kind of plants grown and cultivated on a large scale at a place is called crop .
  - (b) The first step before growing crops is preparation of the soil.
  - (c) Damaged seeds would float on top of water.
  - (d) For growing a crop, sufficient sunlight and water and nutrients from the soil are essential.

**Q2 :**

**Match items in column A with those in column B.**

<b>A</b>	<b>B</b>
(i) <i>Kharif</i> crops	(a) Food for cattle
(ii) <i>Rabi</i> crops	(b) Urea and super phosphate
(iii) Chemical fertilisers	(c) Animal excreta, cow dung, urine and plant waste
(iv) Organic manure	(d) Wheat, gram, pea
	(e) Paddy and maize

**Answer :**

<b>A</b>	<b>B</b>
(i) <i>Kharif</i> crops	(e) Paddy and maize
(ii) <i>Rabi</i> crops	(d) Wheat, gram, pea
(iii) Chemical fertilisers	(b) Urea and super phosphate
(iv) Organic manure	(c) Animal excreta, cow dung, urine and plant waste

**Q3 :**

**Give two examples of each.**

- (a) *Kharif* crop
- (b) *Rabi* crop

**Answer :**

- (a) *Kharif* crop → Paddy, maize
- (b) *Rabi* crop → Wheat, gram

**Q4 :**

**Write a paragraph in your own words on each of the following.**

- (a) Preparation of soil (b) Sowing
- (c) Weeding (d) Threshing

**Answer :**

**(a) Preparation of soil:**

It is the first method to be followed before growing a crop. This method is usually employed for loosening the soil to allow the root to penetrate deep into it. The loosening of the soil helps in the growth of several soil microbes, earthworms etc., which enrich the soil with humus and other essential nutrients. Plants require nutrients for their proper growth and functioning. The process of loosening is called tilling or ploughing the soil. Tilling of soil brings the nutrient-rich soil to the top. This helps the plants to utilize the nutrients for their growth.

**(b) Sowing:**

Sowing is another important step in crop production. It is the process of placing the seed in or on the soil for future growth. The seeds that are selected for growing should be of good quality. This will improve the net yield of the crop. Sowing is usually done with the help of either a traditional tool or a seed drill. The traditional tool is shaped like a funnel. It was used earlier for sowing seeds. Nowadays, seed drills that make the use of tractors are used for sowing seeds. This tool disperses seeds uniformly and sows seeds at proper depth. Sowing by this method saves time and also protects the seeds from birds.

**(c) Weeding:**

Undesirable plants that grow along with the crop are known as weeds. Weeding is the process of removing these weeds. *Xanthium*, *Parthenium*, etc. are some common weeds. Weeds compete with the crop for nutrients, light, and space. As a result, crop plants get lesser nutrients, light, and space for their development. This in turn, reduces their productivity. Thus, various weeding methods are employed.

Some important weeding methods are:

- (i) Weeds can be controlled using weedicides. It is a chemical, which is sprayed in the fields to kill all available weeds. Weedicides are not harmful to crops.
- (ii) Tilling before sowing of crops also helps in removing weeds. Tilling uproots the weeds. The best time for removal of weeds is before they produce flowers and seeds.
- (iii) The manual method of removing weeds is with the help of a *khurpi*. It involves regular uprooting or cutting of weeds close to the ground.

**(d) Threshing:**

Threshing is the process of separating grains or seeds from chaff. It is done after harvesting the crop. It is usually carried out with the help of a machine known as 'Combine'. This machine is a combined harvester and thresher. It harvests plants as well as cleans grains.

**Q5 :**

**Explain how fertilisers are different from manure.**

**Answer :**

Differences between fertilisers and manure:

Fertiliser	Manure
Fertilisers are commercially available plant by the decomposition of animal excreta nutrients. and plant wastes.	Manure is a natural substance prepared
They can be organic or inorganic in nature.	Manure is known to have a large quantity of organic materials and very little amount of plant nutrients.
They ensure healthy growth and development of plants by providing them with nitrogen, organic matter and nutrients. phosphorus, potassium, etc.	They help in enriching the soil with
The addition of fertilisers to the soil requires special guidelines such as dose time, post any special guidelines, addition precautions, etc., to be followed.	The addition of manure does not require
A fertiliser does not provide any humus to the soil. increases soil fertility.	Manure provides humus to the soil and
Its excessive use causes water pollution. It cannot replenish organic matter of soil.	It protects the environment and helps in recycling farm waste.

**Q6 :**

**What is irrigation? Describe two methods of irrigation which conserve water.**

**Answer :**

Irrigation is the process by which water is supplied to crops at different intervals. The time and frequency of irrigation varies according to different seasons, crops, and soil types. There are various sources of irrigation such as wells, canals, rivers, dams, ponds, and lakes.

**Two methods of irrigation which help in conservation of water are:**

a) **Sprinkler system:**

This system is more useful on uneven land, having fewer water supplies. In this method, water is supplied using pipes to one or more central locations within the field. When water is allowed to flow under high pressure with the help of a pump, it gets sprinkled on the crops.

b) **Drip system:**

In this system, water is delivered at or near the roots of plants, drop by drop. This is the most efficient method of irrigation as there is no wastage of water at all. This method is important in areas where water availability is poor.

**Q7 :**

**If wheat is sown in the *kharif* season, what would happen? Discuss.**

**Answer :**

If wheat is sown in the *kharif* season (from June to October), then the whole crop might get destroyed because of many factors such as lack of optimum temperature, adaptability, availability of pests, etc. *Kharif* season includes the rainy season, which is not favourable for the growth of wheat crop. Therefore, wheat crop should not be sown during this season.

**Q8 :**

**Explain how soil gets affected by the continuous plantation of crops in a field.**

**Answer :**

Continuous plantation of crops in a field makes the soil poor in certain nutrients such as nitrogen, phosphorus, potassium, etc. Plants require nutrients for their proper growth and functioning. When a farmer continues to grow crops one after the other, then all nutrients available in the soil reduce and the crop yield decreases automatically.

**Q9 :**

**What are weeds? How can we control them?**

**Answer :**

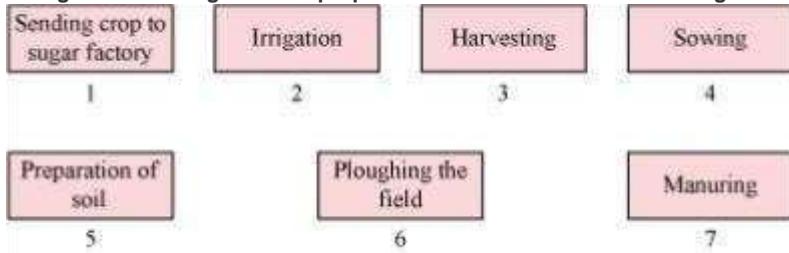
Undesirable plants that grow along with crop plants are known as weeds. *Xanthium*, *Parthenium*, etc. are some common weeds. Weeds compete with the crop for nutrients, light, and space. As a result, crop plants get lesser nutrients, light, and space for their development. This in turn, reduces their productivity. Thus, various weeding methods are employed.

Some important weeding methods are:

- i. Weeds can be controlled using weedicides. It is a chemical, which is sprayed in the fields to kill all available weeds. Weedicides are not harmful to crops.
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- iii. The manual method of removing weeds is with the help of a *khurpi*. It involves regular uprooting or cutting of weeds close to the ground.

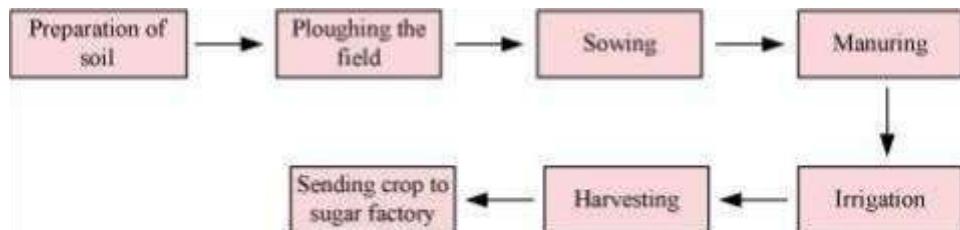
**Q10 :**

**Arrange the following boxes in proper order to make a flow chart of sugarcane crop production.**



**Answer :**

Flow chart of sugarcane crop production:



**Q11 :**

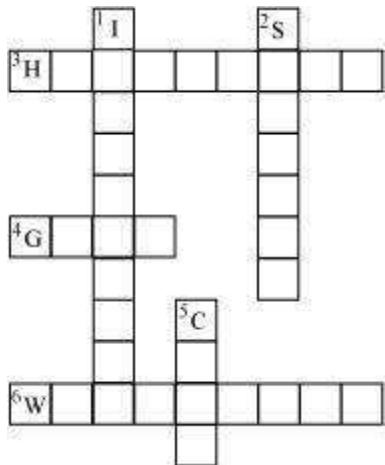
Complete the following word puzzle with the help of clues given below.

**Down**

1. Providing water to the crops.
2. Keeping crop grains for a long time under proper conditions.
5. Certain plants of the same kind grown on a large scale.

**Across**

3. A machine used for cutting the matured crop.
4. A *rabi* crop that is also one of the pulses.
6. A process of separating the grain from chaff.



**Answer :**

**Down**

1. IRRIGATION

2. STORAGE 5.

CROP

**Across**

3. HARVESTER 4.

GRAM

6. WINNOWING

		I			<sup>2</sup> S		
<sup>3</sup> H	A	R	V	E	S	T	O R
		R			O		
		I			R		
		G			A		
<sup>4</sup> G	R	A	M			G	
		T				E	
		I		<sup>5</sup> C			
		O		R			
<sup>6</sup> W	I	N	N	O	W	I	N G
		P					

## NCERT Solutions for Class 8 Science Chapter 2

### Micro organisms: Friend and Foe

Exercise : Solutions of Questions on Page Number : 29

Q1 :

Fill in the blanks:

- (a) Microorganisms can be seen with the help of a \_\_\_\_\_.
- (b) Blue green algae fix \_\_\_\_\_ directly from air to enhance fertility of soil.
- (c) Alcohol is produced with the help of \_\_\_\_\_.
- (d) Cholera is caused by \_\_\_\_\_.

Answer :

- (a) Microorganisms can be seen with the help of a microscope.
- (b) Blue green algae fix nitrogen directly from air to enhance fertility of soil.
- (c) Alcohol is produced with the help of yeast.
- (d) Cholera is caused by bacteria.

Q2 :

Tick the correct answer:

- (a) Yeast is used in the production of
  - (i) sugar (ii) alcohol
  - (iii) hydrochloric acid (iv) oxygen
- (b) The following is an antibiotic
  - (i) Sodium bicarbonate (ii) Streptomycin
  - (iii) Alcohol (iv) Yeast
- (c) Carrier of malaria-causing protozoan is
  - (i) female *Anopheles* mosquito (ii) cockroach
  - (iii) housefly (iv) butterfly
- (d) The most common carrier of communicable diseases is
  - (i) ant (ii) housefly
  - (iii) dragonfly (iv) spider
- (e) The bread or *idli* dough rises because of
  - (i) heat (ii) grinding
  - (iii) growth of yeast cells (iv) kneading
- (f) The process of conversion of sugar into alcohol is called
  - (i) nitrogen fixation (ii) moulding
  - (iii) fermentation (iv) infection

Answer :

- (a) Yeast is used in the production of

- (i) sugar (ii) alcohol ✓  
 (iii) hydrochloric acid (iv) oxygen
- (b) The following is an antibiotic
- (i) sodium bicarbonate (ii) streptomycin ✓  
 (iii) alcohol (iv) yeast
- (c) Carrier of malaria-causing protozoan is
- (i) female *Anopheles* mosquito ✓ (ii) cockroach  
 (iii) housefly (iv) butterfly
- (d) The most common carrier of communicable diseases is
- (i) ant (ii) housefly ✓  
 (iii) dragonfly (iv) spider
- (e) The bread or *idli* dough rises because of
- (i) heat (ii) grinding  
 (iii) growth of yeast cells ✓ (iv) kneading
- (f) The process of conversion of sugar into alcohol is called
- (i) nitrogen fixation (ii) moulding (iii) fermentation ✓ (iv) infection

**Q3 :**

Match the organisms in Column I with their action in Column II.

Column I		Column II	
(i)	Bacteria	(a)	Fixing nitrogen
(ii)	<i>Rhizobium</i>	(b)	Setting of curd
(iii)	<i>Lactobacillus</i>	(c)	Baking of bread
(iv)	Yeast	(d)	Causing malaria
(v)	A protozoan	(e)	Causing cholera
(vi)	A virus	(f)	Causing AIDS
		(g)	Producing antibodies

**Answer :**

Column I		Column II	
(i)	Bacteria	(e)	Causing cholera

**Q4 :**

(ii)	<i>Rhizobium</i>	(a)	Fixing nitrogen
(iii)	<i>Lactobacillus</i>	(b)	Setting of curd
(iv)	Yeast	(c)	Baking of bread
(v)	A protozoan	(d)	Causing malaria
(vi)	A virus	(f)	Causing AIDS

Can microorganisms be seen with the naked eye? If not, how can they be seen?

**Answer :**

Micro-organisms are too small to be seen through naked eyes. They can be seen with the help of a magnifying glass or microscope. For example, fungus that grows on bread is so small that it can be seen only with the help of a magnifying glass or microscope.

**Q5 :**

**What are the major groups of microorganisms?**

**Answer :**

There are five major groups of micro-organisms:

- (i) **Bacteria** - They are single celled disease-causing micro-organisms. They can be spiral or rod- shaped.
- (ii) **Fungi** - They are mostly multicellular disease-causing microbes. Bread moulds are common examples of fungi.
- (iii) **Protozoa** - They mainly include organisms such as *Amoeba*, *Plasmodium*,etc. They can be unicellular or multicellular.
- (iv) **Virus** -Viruses are disease-causing microbes that reproduce only inside the host organism.
- (v) **Algae** - They include multicellular, photosynthetic organisms such as *Spirogyra*, *Chlamydomonas*, etc.

**Q6 :**

**Name the microorganisms which can fix atmospheric nitrogen in the soil.**

**Answer :**

Bacteria such as *Rhizobium* and certain blue-green algae present in the soil can fix atmospheric nitrogen and convert it into usable nitrogenous compounds. These nitrogenous compounds can be easily utilized by plants for the synthesis of plant proteins and other compounds.

**Q7 :**

**Write 10 lines on the usefulness of microorganisms in our lives.**

**Answer :**

Micro-organisms are too small to be seen through naked eyes. However, they are vital to plants and the environment.

**Importance of micro-organisms:**

They are used in winemaking, baking, pickling, and other food making processes.

Alcoholic fermentation by yeast is widely used in the preparation of wine and bread. A bacterium *Lactobacillus*, promotes the formation of curd.

Microbes are used to reduce pollution. For example, decomposers such as bacteria and fungi break down dead bodies and excreta to form inorganic compounds, which can be absorbed by plants.

They are used to increase the soil fertility by fixing the atmospheric nitrogen with the help of bacterium *Rhizobium* and some other blue-green algae.

Microbes also play an important role in the preparation of medicines. Antibiotics are chemicals produced by micro-organisms to kill bacteria. Streptomycin, for example, is an antibiotic.

Certain microbes are also used in the biological treatment of sewage and industrial effluents.

**Q8 :**

**Write a short paragraph on the harms caused by microorganisms.**

**Answer :**

**Harmful effects of micro-organisms:**

Micro-organisms cause diseases in animals. For example, in humans, bacteria cause diseases such as tuberculosis, cholera, typhoid, etc. In cattle, the foot and mouth disease is caused by a virus. Also, several microbes cause diseases in plants. For example, the productivity of wheat, orange, apple, etc. is reduced due to microbial diseases in plants. Certain microbes, on entering into our body, produce toxic substances. This leads to food poisoning. Some micro-organisms such as fungus spoil our food. For example, bread when left unused under moist conditions gets spoilt by fungus, producing a white cotton-like growth on the bread.

**Q9 :**

**What are antibiotics? What precautions must be taken while taking antibiotics?**

**Answer :**

Antibiotics are medicines produced by certain micro-organisms to kill other disease-causing micro-organisms. These medicines are commonly obtained from bacteria and fungi. Streptomycin, tetracycline, penicillin, etc. are common antibiotics.

**Precautions to be taken while using antibiotics:**

- (i) Antibiotics should be taken under the supervision of a well qualified doctor.
- (ii) Course (intake) of antibiotics should be completed as per the prescription given by the doctor.
- (iii) Antibiotics should be taken in the right amount and at the right time. A wrong dose of antibiotics makes the drug ineffective. Also, excessive consumption of drugs may kill the useful bacteria present in our body.

## NCERT Solutions for Class 8 Science Chapter 3

### Synthetic Fibers and Plastics

**Exercise :** Solutions of Questions on Page Number : 41

**Q1 :**

**Explain why some fibres are called synthetic.**

**Answer :**

There are some fibres that are prepared by man by using chemicals. These are called synthetic fibres. These are made of small units that join together to form long chains. Examples of synthetic fibres are rayon, nylon, polyester, acrylic, etc.

**Q2 :**

**Mark (✓) the correct answer.**

**Rayon is different from synthetic fibres because (a)**

**it has a silk-like appearance.**

**(b) it is obtained from wood pulp.**

**(c) its fibres can also be woven like those of natural fibres.**

**Answer :**

Rayon is different from synthetic fibres because (a)

**it has a silk-like appearance.**

**(b) it is obtained from wood pulp. (correct)**

**(c) its fibres can also be woven like those of natural fibres.**

**Q3 :**

**Fill in the blanks with appropriate words.**

**(a) Synthetic fibres are also called \_\_\_\_\_ or \_\_\_\_\_ fibres.**

**(b) Synthetic fibres are synthesised from raw materials called \_\_\_\_\_.**

**(c) Like synthetic fibres, plastic is also a \_\_\_\_\_.**

**Answer :**

**(a) Synthetic fibres are also called artificial or man-made fibres.**

**(b) Synthetic fibres are synthesised from raw materials called petrochemicals.**

**(c) Like synthetic fibres, plastic is also a polymer.**

**Q4 :**

**Give examples which indicate that nylon fibres are very strong.**

**Answer :**

Nylon fibres are very strong. It is used for making ropes used for climbing rocks and for making parachutes. Their usage shows that nylon fibres have high tensile strength.

**Q5 :**

**Explain why plastic containers are favoured for storing food.**

**Answer :**

The characteristics that make plastics favourable for storing food items are:

- (i) Light weight
- (ii) Lower price
- (iii) Good strength
- (iv) Easy handling

**Q6 :**

**Explain the difference between thermoplastic and thermosetting plastics.**

**Answer :**

There are two types of plastics: Thermosetting plastics and Thermoplastics.

Thermosetting plastic	Thermoplastic
Thermosetting plastic cannot be bent easily. It <u>break when forced to bend.</u>	Thermoplastic can be bent easily. may
Thermosetting plastic cannot be softened by <u>heating. Thus, it cannot be reshaped once by heating.</u> Thus, it can be reshaped. moulded.	Thermoplastic can be softened easily

**Q7 :**

**Explain why the following are made of thermosetting plastics.**

- (a) Saucepan handles
- (b) Electric plugs/switches/plug boards

**Answer :**

(a) Saucepan handles are made of thermosetting plastics because these plastics do not get softened on heating. Also, thermosetting plastics such as bakelite are poor conductors of heat.

(b) Thermosetting plastics such as bakelite are poor conductors of heat and electricity. Therefore, they are used for making electric plugs, switches, plug boards, etc.

**Q8 :**

**Categorize the materials of the following products into 'can be recycled' and 'cannot be recycled'.**

**Telephone instruments, plastic toys, cooker handles, carry bags, ball point pens, plastic bowls, plastic covering on electrical wires, plastic chairs, electrical switches.**

**Answer :**

<b>Cannot be recycled</b>	<b>Can be recycled</b>
Telephone instruments	Plastic toys
Cooker handles	Plastic chairs
Electrical switches	Carry bags
	Plastic covering on electrical wires
	Ball point pens
	Plastic bowls

**Q9 :**

**Rana wants to buy shirts for summer. Should he buy cotton shirts or shirts made from synthetic material? Advise Rana, giving your reason.**

**Answer :**

Rana should buy shirts made from cotton. This is because cotton is a good absorber of water. It can soak the sweat coming out of our body and expose it to the environment. Thus, it helps in evaporating the liquid (sweat), thereby cooling our body.

**Q10 :**

**Give examples to show that plastics are non-corrosive in nature.**

**Answer :**

Plastics are not corroded even if they come in contact with strong chemicals. This is because of their non-reactive nature with most materials. For example, the cleansing chemicals that we use at home are stored in plastic bottles, instead of metal containers.

**Q11 :**

**Should the handle and bristles of a tooth brush be made of the same material? Explain your answer.**

**Answer :**

No. The handle and bristles of a tooth brush should be made of different materials. The handle of a toothbrush should be hard and strong, while the bristles should be soft and flexible.

**Q12 :**

**'Avoid plastics as far as possible'. Comment on this advice.**

**Answer :**

Plastics are non-biodegradable. Once introduced into the environment, they take several years to decompose. Plastics add to the environmental pollution. They cannot be burnt as when burnt, they release poisonous gases. Plastic bags thrown in the garbage dump are swallowed by animals like cows. These plastic bags choke their respiratory system and can even prove fatal. Therefore, we should avoid plastics as far as possible.

**Q13 :**

**Answer :**

<b>A</b>		<b>B</b>	
(i)	Polyester	(d)	Fabrics do not wrinkle easily
(ii)	Teflon	(c)	Used to make non-stick cookware
(iii)	Rayon	(a)	Prepared by using wood pulp
(iv)	Nylon	(b)	Used for making parachutes and stockings

Match the terms of column A correctly with the phrases given in column B.

<b>A</b>		<b>B</b>	
(i)	Polyester	(a)	Prepared by using wood pulp
(ii)	Teflon	(b)	Used for making parachutes and stockings
(iii)	Rayon	(c)	Used to make non-stick cookware
(iv)	Nylon	(d)	Fabrics do not wrinkle easily

**Q14 :**

'Manufacturing synthetic fibres is actually helping conservation of forests'. Comment.

**Answer :**

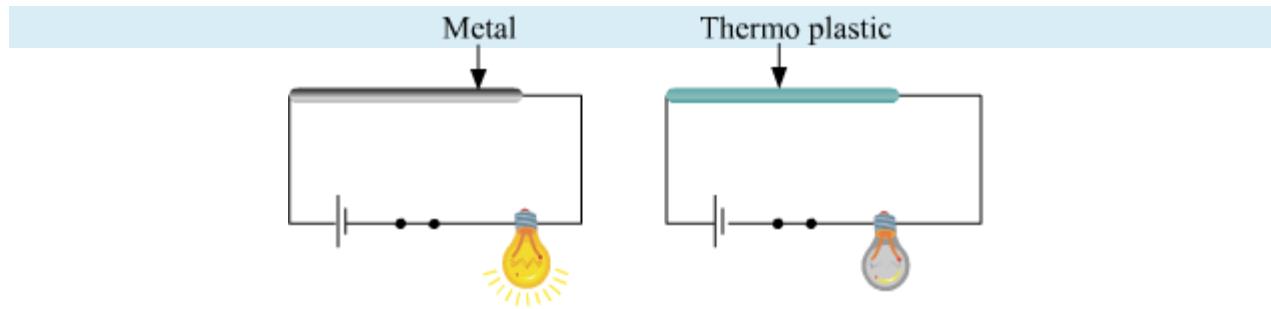
Raw materials for natural fibres are mainly derived from plants and this means cutting a lot of trees. This leads to deforestation. But raw materials of synthetic materials are mainly petrochemicals. Hence, manufacturing synthetic fibres helps in the conservation of forests.

**Q15 :**

Describe an activity to show that thermoplastic is a poor conductor of electricity.

**Answer :**

We will design a circuit to see that thermoplastics are poor conductors of electricity. We need a bulb, some wires, a battery, a piece of metal, and a plastic pipe. Set up the circuit first with the metal and then with the plastic pipe (as shown in the figure). After you switch on the current, you will observe that the bulb glows in the former case. In the latter case, the bulb does not glow. Hence, a plastic pipe (which is a thermoplastic) is shown to be a poor conductor of electricity.



# NCERT Solutions for Class 8 Science Chapter 4

## Materials : Metals and Non-Metals

**Exercise :** Solutions of Questions on Page Number : 53

**Q1 :**

Which of the following can be beaten into thin sheets?

- (a) Zinc (b) Phosphorus (c) Sulphur (d) Oxygen

**Answer :**

- (a) Zinc

**Q2 :**

Which of the following statements is correct?

- (a) All metals are ductile.  
(b) All non-metals are ductile.  
(c) Generally, metals are ductile.  
(d) Some non-metals are ductile.

**Answer :**

- (c) Generally, metals are ductile

However, mercury metal- a liquid at room temperature - cannot be drawn into wires and is not ductile.

**Q3 :**

Fill in the blanks:

- (a) Phosphorus is a very \_\_\_\_\_ non-metal.  
(b) Metals are \_\_\_\_\_ conductors of heat and \_\_\_\_\_.  
(c) Iron is \_\_\_\_\_ reactive than copper.  
(d) Metals react with acids to produce \_\_\_\_\_ gas.

**Answer :**

- (a) Phosphorus is a very reactive non-metal.  
(b) Metals are good conductors of heat and electricity.  
(c) Iron is more reactive than copper.  
(d) Metals react with acids to produce hydrogen gas.

**Q4 :**

Mark 'T' if the statement is true and 'F' if it is false.

- (a) Generally, non-metals react with acids. ( )

- (b) Sodium is a very reactive metal. ( )  
 (c) Copper displaces zinc from zinc sulphate solution. ( )  
 (d) Coal can be drawn into wires. ( )

**Answer :**

- (i) Generally, non-metals react with acids. (F)  
 (ii) Sodium is a very reactive metal. (T)  
 (iii) Copper displaces zinc from zinc sulphate solution. (F)  
 (iv) Coal can be drawn into wires. (F)

**Answer :**

Properties	Metals	Non-metals
1. Appearance	Lustrous	Dull
2. Hardness	Hard	Soft
3. Malleability	Can be beaten into thin sheets	Cannot be beaten into thin sheets
4. Ductility	Can be drawn into wires	Cannot be drawn into wires
5. Heat conduction	Good conductors of heat	Poor conductors of heat
6. Conduction of electricity	Good conductors of electricity	Poor conductors of electricity

**Q5 :**

Some properties are listed in the following Table. Distinguish between metals and non-metals on the basis of these properties.

Properties	Metals	Non-metals
1. Appearance		
2. Hardness		
3. Malleability		
4. Ductility		
5. Heat Conduction		
6. Conduction of Electricity		

**Q6 :**

Give reasons for the following.

- (a) Aluminium foils are used to wrap food items.  
 (b) Immersion rods for heating liquids are made up of metallic substances.

(c) Copper cannot displace zinc from its salt solution.

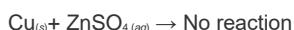
(d) Sodium and potassium are stored in kerosene.

**Answer :**

(a) Aluminium foils are used to wrap food items because aluminium metal is malleable. Therefore, it can be beaten into thin foils.

(b) Metals are good conductors of heat and electricity. Therefore, immersion rods for heating liquids are made of metallic substances.

(c) A metal can displace a less reactive metal from its salt in an aqueous solution. But zinc is more reactive than copper. Therefore, copper cannot displace zinc from its salt solution.



(d) Sodium and potassium are stored in kerosene because they are highly reactive elements. They can easily catch fire even when in contact with air.

**Q7 :**

**Can you store lemon pickle in an aluminium utensil? Explain.**

**Answer :**

Lemon pickle cannot be stored in aluminium utensils because lemon pickle contains acids, which can react with aluminium (metal) liberating hydrogen gas. This can lead to the spoiling of the pickle.

**Q8 :**

**Match the substances given in Column A with their uses given in Column B.**

A		B	
(i)	Gold	(a)	Thermometers
(ii)	Iron	(b)	Electric wire
(iii)	Aluminium	(c)	Wrapping food
(iv)	Carbon	(d)	Jewellery
(v)	Copper	(e)	Machinery
(vi)	Mercury	(f)	Fuel

**Answer :**

A		B	
(i)	Gold	(d)	Jewellery

**Q9 :**

**What happens when**

(ii)	Iron	(e)	Machinery
(iii)	Aluminium	(c)	Wrapping food
(iv)	Carbon	(f)	Fuel
(v)	Copper	(b)	Electric wire
(vi)	Mercury	(a)	Thermometers

(a) Dilute sulphuric acid is poured on a copper plate?

(b) Iron nails are placed in copper sulphate solution?

Write word equations of the reactions involved.

**Answer :**

(a) When dilute sulphuric acid is poured on a copper plate, there will be no reaction between copper and dilute sulphuric acid as copper is less reactive and hence no products will be formed.

(b) Iron being more reactive displaces copper from copper sulphate solution. In this reaction, the blue colour of copper sulphate fades and there is deposition of copper on the iron nail.



**Q10 :**

Saloni took a piece of burning charcoal and collected the gas evolved in a test tube.

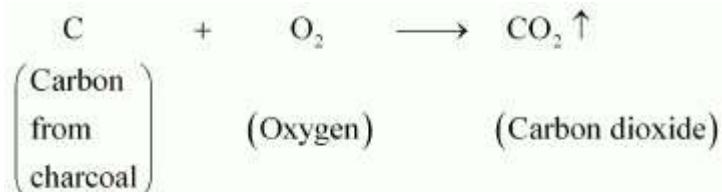
(a) How will she find the nature of the gas?

(b) Write down word equations of all the reactions taking place in this process.

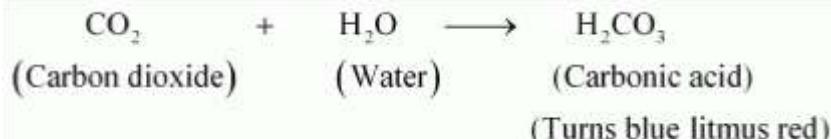
**Answer :**

(a) Add a few drops of water in the test tube containing gas. Now, cover the test tube and shake it well. After shaking, test the solution with blue litmus and red litmus. It will turn blue litmus red. Thus, the gas is acidic in nature.

(b) Charcoal reacts with oxygen to form carbon dioxide gas.



Carbon dioxide reacts with water to form carbonic acid, which turns blue litmus paper red.



**Q11 :**

**One day Reeta went to a jeweller's shop with her mother. Her mother gave an old gold jewellery to the goldsmith to polish. Next day when they brought the jewellery back, they found that there was a slight loss in its weight. Can you suggest a reason for the loss in weight?**

**Answer :**

To polish a gold ornament, it is dipped in a liquid called aqua regia (a mixture of hydrochloric acid and nitric acid). On getting the environment of aqua regia, the outer layer of gold dissolves and the inner shiny layer appears. The dissolving of the layer causes a reduction in the weight of the jewellery.

# NCERT Solutions for Class 8 Science Chapter 5

## Coal and Petroleum

**Exercise :** Solutions of Questions on Page Number : **62**

**Q1 :**

**What are the advantages of using CNG and LPG as fuels?**

**Answer :**

The advantages of using compressed natural gas (CNG) and liquified petroleum gas (LPG) as fuels are:

- (i) They can be burnt directly.
- (ii) They can be transported easily through pipe lines.
- (iii) They are clean fuels and do not give smoke when burnt.
- (iv) They give a lot of heat energy when burnt.

**Q2 :**

**Name the petroleum product used for surfacing of roads.**

**Answer :**

Bitumen, a petroleum product, is used for surfacing roads.

**Q3 :**

**Describe how coal is formed from dead vegetation. What is this process called?**

**Answer :**

Millions of years ago, dense forests got buried under the soil due to natural processes like storms, floods, and earthquakes. These got compressed as more and more soil got deposited over them. When they got buried deep in the soil, they were exposed to very high pressure and temperature. Under these conditions, these slowly got converted into coal. This process of formation of coal from dead vegetation is called carbonization.

**Q4 :**

**Fill in the banks.**

- (a) Fossil fuels are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- (b) Process of separation of different constituents from petroleum is called \_\_\_\_\_.
- (c) Least polluting fuel for vehicles is \_\_\_\_\_.

**Answer :**

- (a) Fossil fuels are coal, petroleum and natural gas.
- (b) Process of separation of different constituents from petroleum is called refining.
- (c) Least polluting fuel for vehicles is compressed natural gas (CNG).

**Q5 :**

**Tick True/False against the following statements.**

- (a) Fossil fuels can be made in the laboratory. (T / F)
- (b) CNG is more polluting fuel than petrol. (T / F)
- (c) Coke is almost pure form of carbon. (T / F)
- (d) Coal tar is a mixture of various substances. (T / F)
- (e) Kerosene is not a fossil fuel. (T / F)

**Answer :**

- (a) Fossil fuels can be made in the laboratory. (F)
- (b) CNG is more polluting fuel than petrol. (F)
- (c) Coke is almost pure form of carbon. (T)
- (d) Coal tar is a mixture of various substances. (T)
- (e) Kerosene is not a fossil fuel. (F)

**Q6 :**

**Explain why fossil fuels are exhaustible natural resources.**

**Answer :**

Fossil fuels require millions of years to form from the dead vegetation and animals that get buried deep inside the Earth. They require high temperature and pressure for their formation, which cannot be provided in the laboratory. Thus, fossils are limited. Therefore, the use of fossil fuels at this rate will lead to their exhaustion.

**Q7 :**

**Describe characteristics and uses of coke.**

**Answer :**

Characteristics of coke are:

- (i) Tough
- (ii) Porous (iii)  
Black in colour

Uses of coke:

- (i) In manufacture of steel.
- (ii) In the extraction of metals (as a reducing agent).

**Q8 :**

**Explain the process of formation of petroleum.**

**Answer :**

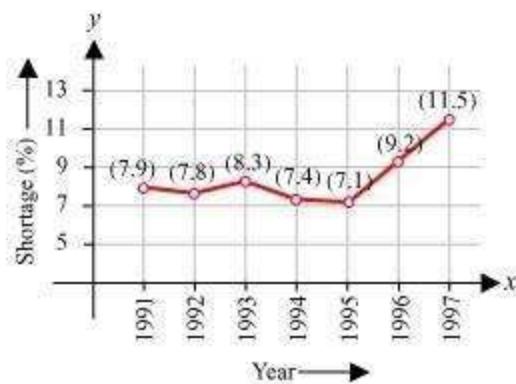
Petroleum was formed from dead organisms that got buried in the sea millions of years ago. These dead bodies got covered with layers of sand and clay. Lack of air, high temperature, and high pressure transformed these dead organisms into petroleum and natural gas.

**Q9 :**

The following Table shows the total power shortage in India from 1991 - 1997. Show the data in the form of a graph. Plot shortage percentage for the years on the Y-axis and the year on the X-axis.

S. No.	Year	Shortage (%)
1	1991	7.9
2	1992	7.8
3	1993	8.3
4	1994	7.4
5	1995	7.1
6	1996	9.2
7	1997	11.5

**Answer :**



# NCERT Solutions

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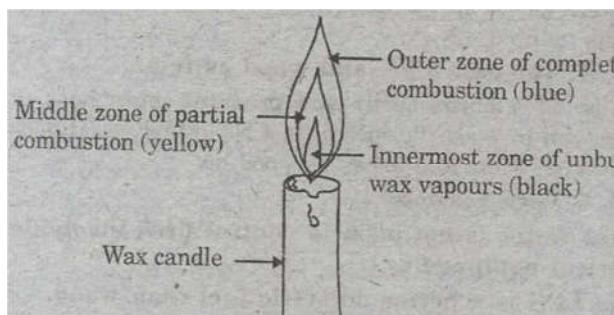
## Class-VIII (CHAPTER-06) COMBUSTION AND FLAME

### Answers

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1. Conditions under which combustion can take place are as follows:
  - a. Air
  - b. The ignition temperature
  - c. Inflammable substance.
2. Fill in the blanks.
  - (a) Burning of wood and coal causes **pollution** of air.
  - (b) A liquid fuel, used in home is **LPG**.
  - (c) Fuel must be heated to its **ignition temperature** before it starts burning.
  - (d) Fire produced by oil cannot be controlled by **water**.
3. The use of CNG in automobiles has reduced pollution in our cities because CNG does not produce any poisonous gas on burning. That is why pollution in our cities is reduced.
4. LPG burns easily and produces more heat in comparison to wood. Besides, it is a clean fuel, it does not produce fume and ashes as wood do. LPG can be stored and transported easily and conveniently.
5. (a) Water is not used to control fire produced by electrical equipment because water is conductor of electricity and may result in electric shock.  
(b) LPG is a substance which is readily available. It is cheaper and burns easily in air at moderate rate. It produces large amount of heat and does not leave behind any undesirable substance.  
(c) Paper catches fire easily, but when it is wrapped around an aluminium pipe, the ignition temperature does not meet as heat is transferred to aluminium to lower the temperature of paper.

6.



7. The calorific value of a fuel is expressed in kilojoules per kg (kj/kg).
  8. Carbon dioxide being heavier than oxygen covers the fire like a blanket. Since the contact between fuel and oxygen is cut off, the fire is controlled. The added advantage of carbon dioxide is that in most cases it does not harm the electrical appliances.
  9. Green leaves contain lot of water. So, when we try to burn green leaves, water contained in the leaves cools the combustible materials, so that its temperature is brought below its ignition temperature. This prevents the burning of green leaves.  
In case of dry leaves, water is absent in them so burning process start as the temperature is raised above the ignition temperature and the leaves catch fire easily.
  10. The goldsmith uses the outermost zone of a flame with a metallic blow pipe for melting gold and silver.  
The flame in outermost zone has the highest temperature sufficient to melt the gold and silver.
  11. Calorific value of a fuel = Total heat produced/total mass burnt.  
Here, mass of fuel = 4.5 kg.  
Heat produced = 180,000 kj.  
Therefore, calorific value of fuel =  $180,000 / 4.5\text{kg} = 40,000 \text{ kj/kg}$ .
  12. Yes, process of rusting can be called combustion, in fact, slow combustion, because rusting also takes place in the air in presence of humidity in the atmosphere.
  13. The water of Ramesh's beaker will get heated in a shorter time because the outermost part of the flame is the hottest.
-

# NCERT Solutions for Class 8 Science Chapter 7

## Conservation of Plants and Animals

Exercise : Solutions of Questions on Page Number : 86

Q1 :

Fill in the blanks:

- (a) A place where animals are protected in their natural habitat is called a \_\_\_\_.
- (b) Species found only in a particular area are known as \_\_\_\_.
- (c) Migratory birds fly to far away places because of \_\_\_\_ changes.

Answer :

- (a) A place where animals are protected in their natural habitat is called a sanctuary.
- (b) Species found only in a particular area are known as endemic.
- (c) Migratory birds fly to far away places because of climatic changes.

Q2 :

Differentiate between the following.

- (a) Wildlife sanctuary and biosphere reserve
- (b) Zoo and wildlife sanctuary
- (c) Endangered and extinct species
- (d) Flora and fauna

Answer :

(a)

Wildlife sanctuary	Biosphere reserve
It is an area within which animals are protected from possible dangers such as hunting. Their habitat is also conserved in this area.	It is a large protected area constructed for the conservation of biodiversity.
It provides protection and suitable living conditions to wild animals.	It helps in the conservation of various life forms such as plants, animals, and micro-organisms.
Pachmarhi sanctuary is a wildlife sanctuary.	Pachmarhi biosphere reserve is a popular biosphere reserve.

(b)

Zoo	Wild life sanctuary
-----	---------------------

It is a facility in which animals are kept for public exhibition.	It is an area within which animals are protected from possible dangers such as hunting. Their habitat is also conserved in this area.
It is an artificial habitat.	It conserves the natural habitat of animals.

(c)

Endangered species	Extinct species
It is a population of species that is on the verge of becoming extinct.	It is a population of species that no longer exists. Hence, it is extinct.
Blue whale, tiger, leopard, etc. are examples of endangered species.	Dodo, passenger pigeon, etc. are examples of extinct species.

(d)

Flora	Fauna
It refers to all living plants in a particular area.	It refers to all animals living in a particular area.
Sal, teak, mango, etc. form the flora of Pachmarhi biosphere reserve.	Leopard, wolf, wild dog, etc. form the fauna of Pachmarhi biosphere reserve.

Q3 :

**Discuss the effects of deforestation on the following.**

- (a) Wild animals
- (b) Environment
- (c) Villages (Rural areas)
- (d) Cities (Urban areas)
- (e) Earth
- (f) The next generation

**Answer :**

(a) **Effects of deforestation on wild animals:**

Deforestation is the removal of trees or other vegetation from an area for industrial, agricultural, or other purposes. Trees and other vegetation form the habitat of many animals. Hence, if the habitat of wild animals is destroyed, then their numbers would automatically decline.

(b) **Effects of deforestation on the environment:**

Plants absorb CO<sub>2</sub> from the atmosphere to perform photosynthesis. If plants are destroyed, then the level of CO<sub>2</sub> in the atmosphere will rise. As a result, CO<sub>2</sub> will trap more heat radiations, thereby adding to global warming. An increase in the temperature of the Earth will disturb the natural water cycle. As a result, there will be a change in the rainfall pattern. This could lead to floods or droughts.

**(c) Effects of deforestation on villages:**

Roots of plants hold soil particles together. In the absence of plants, the top layer of the soil will be easily removed by the action of high speed winds or water flow. Thus, deforestation increases the chances of soil erosion. As a result, soil loses humus and become less fertile. Hence, a fertile land, which is a source of living for farmers in villages, gets converted into a desert.

**(d) Effects of deforestation on cities:**

Deforestation in cities can increase the risk of many natural calamities such as floods and droughts in that area. Also, it can lead to global warming due to an increase in the level of CO<sub>2</sub> in the atmosphere as a result of vehicular and industrial pollution. This increase in temperature can disturb the natural water cycle of an area (e) **Effects of deforestation on the Earth:**

As a result of deforestation, chances of desertification, droughts, floods, etc. increase. Deforestation can also increase the level of CO<sub>2</sub> in the Earth. It will lead to an increase in temperature i.e., global warming. As a result, the entire natural water cycle will get disrupted. This again increases the risk of natural calamities.

**(f) Effects of deforestation on the next generation:**

Deforestation is slowly changing our environmental conditions. It is responsible for global warming, soil erosion, greenhouse effect, drought, floods, and many other global problems. As a result, the next generation will have to face severe consequences of deforestation.

**Q4 :**

**What will happen if:**

- (a) we go on cutting trees.**
- (b) the habitat of an animal is disturbed.**
- (c) the top layer of soil is exposed.**

**Answer :**

(a) If we go on cutting trees, the natural habitat of many animals will get completely destroyed. As a result, the biodiversity of many areas will be severely affected. Also, there will be an increase in the temperature of the Earth as a result of global warming, which can disturb the natural water cycle. As a result, there will be a change in the rainfall pattern. This could lead to floods or droughts. This will also increase the risk of soil erosion, desertification, and natural calamities.

(b) The habitat of an animal provides it with necessities such as shelter, food, and protection. If the habitat of an animal is disturbed, then it will be forced to go to other places in search of food and shelter. The animal could get killed by other animals in this process.

(c) If the top layer of soil is exposed, then it will gradually expose the lower layer of soil, which is hard and rocky in nature. This type of soil is less fertile as it contains less humus. Continued soil erosion will make the land barren or infertile.

**Q5 :**

**Answer in brief:**

- (a) Why should we conserve biodiversity?**
- (b) Protected forests are also not completely safe for wild animals. Why?**
- (c) Some tribals depend on the jungle. How?**
- (d) What are the causes and consequences of deforestation?**
- (e) What is Red Data Book?**
- (f) What do you understand by the term migration?**

**Answer :**

- (a) Biodiversity refers to the number and variety of various life forms such as plants, animals, and micro-organisms in an area. Plants and animals depend on each other for survival. This means that the destruction of either of the two will affect the life of the other. Hence, we need to conserve biodiversity to maintain the balance of nature.
- (b) Protected forests are not completely safe for wild animals because people who live near or adjacent to forests use resources from forests to fulfil their own requirements. In this process, wild animals are killed and sold for lucrative amounts of money.
- (c) Tribals gather food, fodder, and fallen branches of trees from forests. Hence, they depend on forests for their daily requirements.
- (d) Causes of deforestation:
- (i) Forests are cleared for accommodating expanding urban areas and for fulfilling their ever-increasing requirements.
  - (ii) Forests are destroyed to clear land for crops and cattle grazing.
  - (iii) Trees are cut down to be used for firewood.
- Consequences of deforestation:
- (i) Soil erosion
  - (ii) Loss of biodiversity
  - (iii) Floods and droughts
  - (iv) Climate change due to global warming
  - (v) Disruption of water cycle
- (e) Red Data Book is a source book that maintains an international list of all endangered animal and plant species. This book is maintained by IUCN (International Union for Conservation of Nature and Natural resources).
- (f) Migration refers to the movement of an organism or a group of organisms from its natural habitat to another place at a particular time every year. Organisms migrate from one place to another to avoid inhabitable climatic conditions or for breeding.

**Q6 :**

**In order to meet the ever-increasing demand in factories and for shelter, trees are being continually cut. Is it justified to cut trees for such projects? Discuss and prepare a brief report.**

**Answer :**

No. It is not at all justified to cut trees to meet the ever increasing demands of human population. Forests are the habitat of several organisms including wild animals. They provide us with good quality air as they give out O<sub>2</sub> and absorb the harmful CO<sub>2</sub> gas from the atmosphere. In the process, they prevent the excessive heating of the atmosphere. They prevent soil erosion and natural calamities such as floods and droughts. They increase the fertility of the soil and help conserve biodiversity. The cutting of forests to meet the demands of growing human population will lead to global warming, soil erosion, greenhouse effect, droughts, floods, and many more problems. The destruction of forests will disturb the balance of nature. Hence, forests must be conserved.

**Q7 :**

**How can you contribute to the maintenance of green wealth of your locality? Make a list of actions to be taken by you.**

**Answer :**

I can help in maintaining the green wealth of my locality by taking care of the plants and trees growing in or around my locality. I can plant more and more trees. I can also encourage the people in my locality to plant more trees by informing them about the importance of growing trees. I can make young children aware of the effects that deforestation has on our environment and on our planet. I can also ask them to water the plants daily, which will take very little of their time. I believe planting new trees is as important as taking care of the existing trees.

**Q8 :**

**Explain how deforestation leads to reduced rainfall.**

**Answer :**

Deforestation is the removal of trees or other vegetation from an area for industrial, agricultural, or other purposes. Plants or trees absorb CO<sub>2</sub> from the atmosphere. If plants are destroyed, then the level of CO<sub>2</sub> in the atmosphere will rise. The high levels of CO<sub>2</sub> in the atmosphere will trap more heat radiations, leading to global warming. This increase in temperature of the Earth will disturb the natural water cycle. As a result of disruption in the water cycle, there will be a change in the rainfall pattern. The reduced amount of rainwater can cause droughts.

**Q9 :**

**Find out about national parks in your state. Identify and show their location on the outline map of India.**

**Answer :**

One of the national parks located near Delhi is the Corbett National Park.



**Q10 :**

**Why should paper be saved? Prepare a list of ways by which you can save paper.**

**Answer :**

Paper should be saved because it takes around seventeen full grown trees to make one tonne of paper. Trees, as we know, are important to maintain a balance of nature. Therefore, in order to save trees and prevent the impact of their loss on living organisms, we need to save paper.

**Ways by which paper can be saved:**

- (i) Collect used paper and recycle it.
- (ii) Use both sides of a paper for writing.
- (iii) Spread awareness about the importance of paper.
- (iv) Use paper intelligently.

**Q11 :**

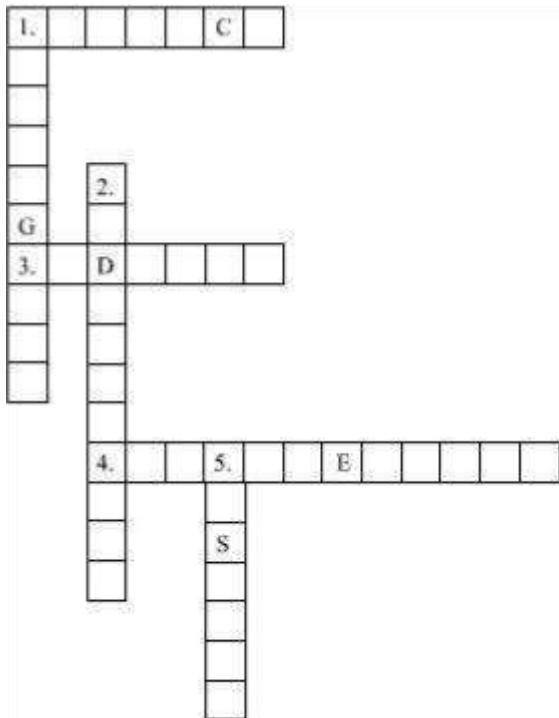
**Complete the word puzzle.**

**Down**

- 1. Species on the verge of extinction.**
- 2. A book carrying information about endangered species.**
- 5. Consequence of deforestation.**

**Across**

- 1. Species which have vanished.**
- 3. Species found only in a particular habitat.**
- 4. Variety of plants, animals and microorganisms found in an area.**



**Answer :**

**Down**

1. ENDANGERED
2. RED DATA BOOK
5. DESERTS

**Across**

1. EXTINCT
3. ENDEMICH
4. BIODIVERSITY

E	X	T	I	N	C	T					
N											
D											
A		R									
N		E									
G											
E	N	D	E	M	I	C					
R		D									
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D		T									
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# NCERT Solutions for Class 8 Science Chapter 8

## Cell - Structure and Functions

**Exercise :** Solutions of Questions on Page Number : 98

**Q1 :**

Indicate whether the following statements are True (T) or False (F).

- (a) Unicellular organisms have one-celled body. (T / F)
- (b) Muscle cells are branched. (T / F)
- (c) The basic living unit of an organism is an organ. (T / F)
- (d) Amoeba has irregular shape. (T / F)

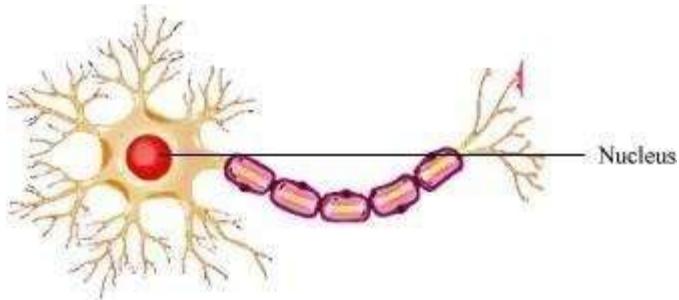
**Answer :**

- (a) Unicellular organisms have one-celled body. (T)
- (b) Muscle cells are branched. (F)
- (c) The basic living unit of an organism is an organ. (F)
- (d) Amoeba has irregular shape. (T)

**Q2 :**

Make a sketch of the human nerve cell. What function do nerve cells perform?

**Answer :**



**Nerve cell**

The function of a nerve cell is to transmit messages to the brain and also to take away messages from the brain to the receptor organs. Thus, it controls the working of different parts of the body.

**Q3 :**

Write short notes on the following.

- (a) Cytoplasm
- (b) Nucleus of a cell

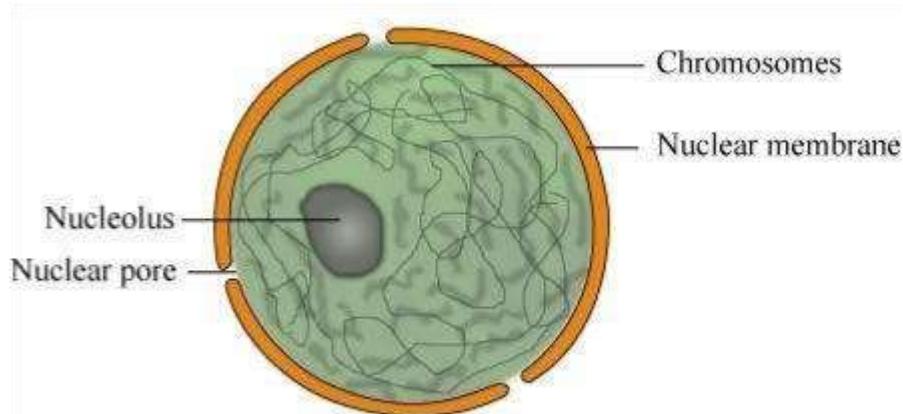
**Answer :**

- (a) **Cytoplasm:**

It is a fluid that fills the cell and occurs between the plasma membrane and the nucleus. Cell organelles such as mitochondria, ribosomes, Golgi bodies, etc. are suspended in the cytoplasm. The cytoplasm helps in the exchange of materials between cell organelles.

(b) **Nucleus of a cell:**

The nucleus is a spherical structure generally present at the centre of a cell. The nucleus is composed of the following components:



(i) **Nuclear membrane:**

It is a double-layered membrane which separates the contents of the nucleus from the cytoplasm. The nuclear membrane has nuclear pores that allow the transfer of specific substances in and out of the nucleus.

(ii) **Nucleolus:**

It is a small spherical body that is not bound by any membrane.

(iii) **Chromosomes:**

These are thread-like structures that carry genes. Genes contain information necessary for the transfer of characteristics from the parents to the offspring. Thus, chromosomes play an important role in the inheritance of characteristics.

**Q4 :**

**Which part of the cell contains organelles?**

**Answer :**

Cytoplasm is the part of the cell that contains various organelles such as mitochondria, ribosomes, Golgi bodies, etc. Cytoplasm is a fluid that fills the cell and occurs between the plasma membrane and the nucleus.

**Q5 :**

**State the difference between eukaryotes and prokaryotes.**

**Answer :**

Prokaryotes	Eukaryotes
Most prokaryotes are unicellular.	Most eukaryotes are multicellular.
The nucleus is poorly defined due to the absence of a nuclear membrane.	The nucleus is well defined and is surrounded by a nuclear membrane.

Nucleolus is absent      Nucleolus is present. Where  
 Cell organelles such as plastids,      Cell organelles such as plastids,      chromos mitochondria,  
 golgi bodies, etc. are absent. mitochondria, golgi bodies, etc. are present. <sup>omes</sup> found in Bacteria  
 and blue-green algae are      Fungi, plant, and animal cells are eukaryotic <sup>a cell?</sup>  
 prokaryotic cells. cells. their  
 State  
 function.

**Answer :**

The nucleus contains thread-like structures called chromosomes. Chromosomes play an important role in the inheritance of characters. They carry genes that help in the transfer of characters from the parents to the offspring.

**Q7 :**

'Cells are the basic structural units of living organisms'. Explain.

**Answer :**

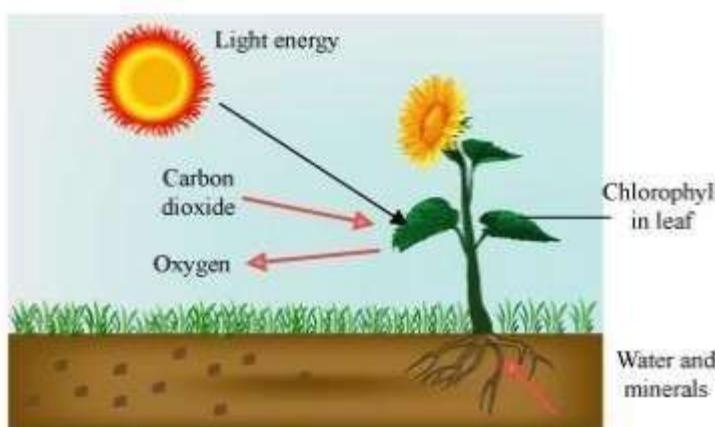
Cells constitute various components of plants and animals. A cell is the smallest unit of life and is capable of all living functions. Cells are the building blocks of life. This is the reason why cells are referred to as 'the basic structural and functional units of life'. All cells vary in their shapes, sizes, and activities they perform. In fact, the shape and size of the cell is related to the specific function it performs.

**Q8 :**

Explain why chloroplasts are found only in plant cells?

**Answer :**

Chloroplasts are found only in plant cells. They contain a green pigment called chlorophyll. This green pigment is important for photosynthesis in green plants. This chlorophyll pigment traps solar energy and utilizes it to manufacture food for the plant.



**Q9 :**

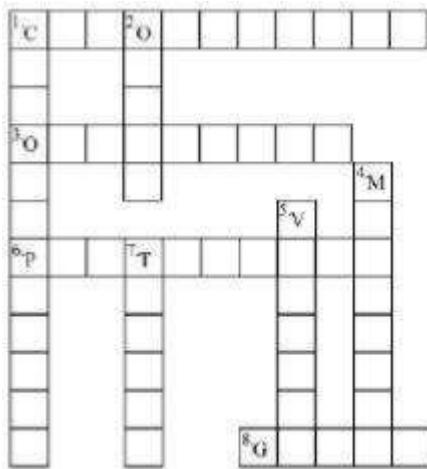
Complete the crossword with the help of clues given below.

Across

1. This is necessary for photosynthesis.
3. Term for component present in the cytoplasm.
6. The living substance in the cell.
8. Units of inheritance present on the chromosomes.

**Down**

1. Green plastids.
2. Formed by collection of tissues.
4. It separates the contents of the cell from the surrounding medium.
5. Empty structure in the cytoplasm.
7. A group of cells.



**Answer :**

**Across**

1. CHLOROPHYLL
3. ORGANELLE
6. PROTOPLASM
8. GENES

**Down**

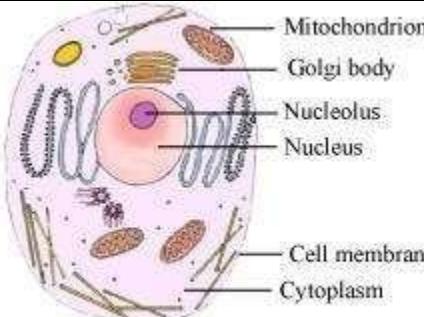
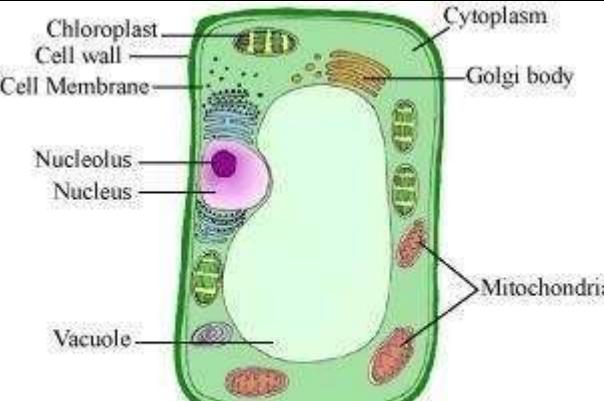
1. CHLOROPLASTS
2. ORGAN
4. MEMBRANE
5. VACUOLE
7. TISSUE



Q10 :

Make sketches of animal and plant cells. State three differences between them.

Answer :

Animal cell	Plant cell
 <p style="text-align: center;"><b>Animal cell</b></p>	 <p style="text-align: center;"><b>Plant cell</b></p>
They are generally small in size.	They are usually larger than animal cells.
Cell wall is absent.	Cell wall is present.
Vacuoles are small in size.	Vacuoles are larger in size.
No other animal cell possesses plastids except for the protozoan <i>Euglena</i> .	Plastids are present.

# NCERT Solutions for Class 8 Science Chapter 9

## Reproduction in Animals

**Exercise :** Solutions of Questions on Page Number : 110

**Q1 :**

**Explain the importance of reproduction in organisms.**

**Answer :**

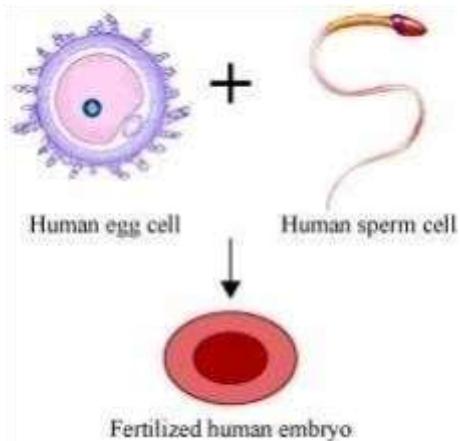
Reproduction is a biological process through which living organisms produce offspring similar to themselves. Living organisms reproduce to maintain their number and for the continuation of their species. Thus, reproduction ensures the continuation of similar kinds of individuals.

**Q2 :**

**Describe the process of fertilization in human beings.**

**Answer :**

Fertilization involves the fusion of the male and the female gamete. The male and the female gametes are released from the male and the female reproductive organs. Sperms or male gametes are released from the male reproductive organ i.e., the penis. These sperms then enter the female body through the vagina. Then, they travel through the fallopian tubes where they meet the eggs. Hence, the process of fertilization takes place in the fallopian tubes.



During fertilization, the haploid nucleus of the sperm and that of the ovum fuse with each other to form the zygote. This zygote divides to form an embryo which in turn develops into a foetus.

**Q3 :**

**Choose the most appropriate answer.**

- (a) Internal fertilization occurs (i) in female body.  
(ii) outside female body.  
(iii) in male body.  
(iv) outside male body.
- (b) A tadpole develops into an adult frog by the process of  
(i) fertilization  
(ii) metamorphosis

(iii) embedding

(iv) budding

(c) The number of nuclei present in a zygote is

(i) none

(ii) one

(iii) two

(iv) four

**Answer :**

- (a) (i) Internal fertilization occurs in the female body.  
(b) (ii) A tadpole develops into an adult frog by the process of metamorphosis.  
(c) (ii) The number of nuclei present in a zygote is one.

**Q4 :**

Indicate whether the following statements are True (T) or False (F).

- (a) Oviparous animals give birth to young ones. ( )  
(b) Each sperm is a single cell. ( )  
(c) External fertilization takes place in frogs. ( )  
(d) A new human individual develops from a cell called gamete. ( )  
(e) Egg laid after fertilization is made up of a single cell. ( )  
(f) *Amoeba* reproduces by budding. ( )  
(g) Fertilization is necessary even in asexual reproduction. ( )  
(h) Binary fission is a method of asexual reproduction. ( )  
(i) A zygote is formed as a result of fertilization. ( )  
(j) An embryo is made up of a single cell. ( )

**Answer :**

- (a) Oviparous animals give birth to young ones. (F)  
(b) Each sperm is a single cell. (T)  
(c) External fertilization takes place in frogs. (T)  
(d) A new human individual develops from a cell called gamete. (F)  
(e) Egg laid after fertilization is made up of a single cell. (T)  
(f) *Amoeba* reproduces by budding. (F)  
(g) Fertilization is necessary even in asexual reproduction. (F)  
(h) Binary fission is a method of asexual reproduction. (T)  
(i) A zygote is formed as a result of fertilization. (T)  
(j) An embryo is made up of a single cell. (F)

**Q5 :**

Give two differences between a zygote and a foetus.

**Answer :**

Zygote	Foetus
It is a fertilized egg formed after the fusion of the sperm with the egg.	It is a stage of the embryo that shows all the main recognizable body parts of a mature organism.
The zygote divides several times to form an embryo.	An embryo gradually develops into a foetus.

**Q6 :**

**Define asexual reproduction. Describe two methods of asexual reproduction in animals.**

**Answer :**

Asexual reproduction is a mode of reproduction that does not involve the fusion of the male and the female gamete. It requires only one parent, and the offsprings produced are exact copies of their parents.

**Two methods of asexual reproduction in animals are:**

(i) **Binary fission:**

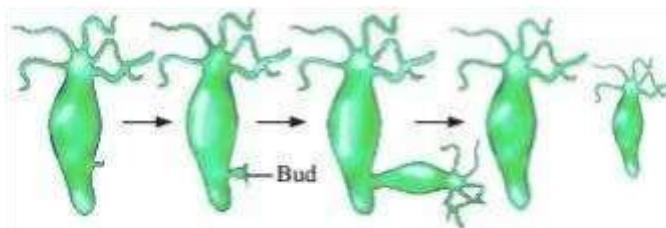
It is a type of asexual reproduction in which a single cell divides into two halves. Organisms that reproduce through binary fission are bacteria and Amoeba. In Amoeba, the division of cells can take place in any plane. It involves the division of its nucleus into two nuclei, which is followed by the division of its body into two halves. Each half of the body receives a nucleus.



**Binary fission in Amoeba (ii)**

**Budding:**

Budding involves the formation of a new individual from the bulges, known as buds formed on the parent body. This method of reproduction is common in Hydra. In Hydra, the cells divide rapidly at a specific site and develop as an outgrowth, called the bud. These buds, while being attached to the parent plant, develop into smaller individuals. When these individuals become mature enough, they detach from the parent's body and become independent individuals.



**Budding in Yeast**

**Q7 :**

**In which female reproductive organ does the embryo get embedded?**

**Answer :**

The embryo gets embedded in the wall of the uterus. The embryo while it is still attached to the uterus gradually develops various body parts such as hands, legs, head, eyes, etc. The embryo is then called a foetus.

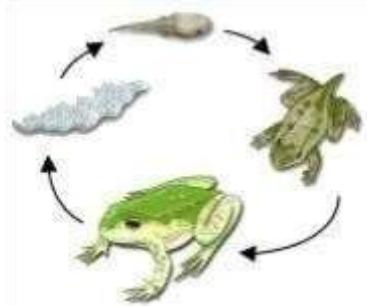
**Q8 :**

**What is metamorphosis? Give examples.**

**Answer :**

Metamorphosis is a biological process of transforming a larva into an adult. This involves relatively sudden and abrupt changes in the animal's structure. Frogs and insects are examples of organisms showing metamorphosis. The life cycle of a frog has three distinct stages:

EGG → TADPOLE → ADULT



**Life cycle of a frog**

The tadpole that emerges from the egg contains gills, a tail, and a small circular mouth. They can swim freely in water. The tadpole grows and involves abrupt changes in its structure and develops into a mature frog. A tadpole's metamorphosis begins with the development of limbs, lung development, and finally the absorption of the tail by the body.

**Q9 :**

**Differentiate between internal fertilization and external fertilization.**

**Answer :**

<b>Internal fertilization</b>	<b>External fertilization</b>
It involves the fusion of the male and the female gamete inside the female body.	It involves the fusion of the male and the female gamete outside the female body.
Chances of the survival of the offspring are more. Therefore, a small number of eggs are produced.	Chances of survival of the offspring are less. Therefore, a large number of eggs are produced.
Humans, cows, hens are organisms showing internal fertilization.	Fish, frog, starfish are organisms showing external fertilization.

**Q10 :**

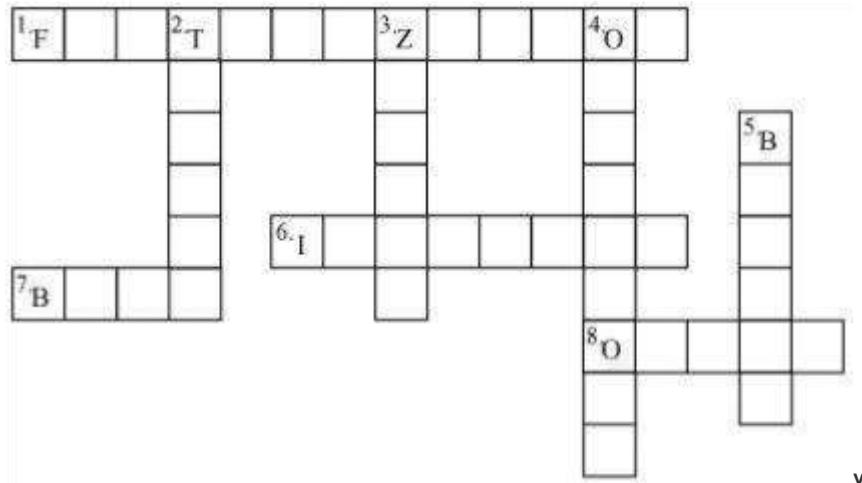
**Complete the crossword puzzle using the hints given below.**

**Across**

1. The process of the fusion of the gametes.
6. The type of fertilization in hen.
7. The term used for bulges observed on the sides of the body of Hydra.
8. Eggs are produced here.

**Down**

2. Sperms are produced in these male reproductive organs.
3. Another term for the fertilized egg.
4. These animals lay eggs.
5. A type of fission in amoeba.



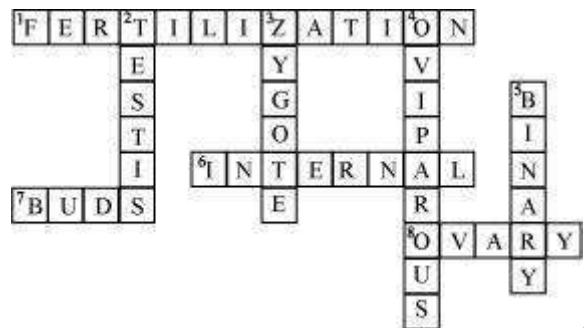
**Answer :**

**Across**

1. FERTILIZATION
6. INTERNAL
7. BUDS
8. OVARY

**Down**

2. TESTIS
3. ZYGOTE
4. Oviparous
5. BINARY



# NCERT Solutions for Class 8 Science Chapter 10

## Reaching the Age of Adolescence

**Exercise :** Solutions of Questions on Page Number : 124

**Q1 :**

**What is the term used for secretions of endocrine glands responsible for changes taking place in the body?**

**Answer :**

Hormones are chemical substances which are secreted by endocrine glands. They are responsible for changes taking place in the body.

**Q2 :**

**Define adolescence.**

**Answer :**

Adolescence is the time period between the beginning of puberty and adulthood. During this period, the body undergoes several changes alongside reproductive maturity. It begins around the age of 11 and lasts till 18 or 19 years of age. The period of adolescence may vary from person to person.

**Q3 :**

**What is menstruation? Explain.**

**Answer :**

Menstruation is the process of the shedding of the uterine lining on a regular monthly basis. It begins at puberty and is the reproductive cycle of the female body. Every month, the uterus prepares itself to receive a fertilized egg. Therefore, the inner lining of the uterus becomes thick and is supplied with blood to nourish the embryo. If the egg is not fertilized, then the lining of the uterus breaks down and gets released in the form of blood through the vagina. This lasts for about two to eight days. This cycle occurs every month and is known as the menstrual cycle.

**Q4 :**

**List changes in the body that take place at puberty.**

**Answer :**

Changes at puberty:

- (i) Sudden increase in height and weight.
- (ii) Broadening of shoulders and widening of chest in boys. In girls, the region below waist becomes wider.
- (iii) In boys, under the influence of hormones, the larynx becomes prominent, the vocal cords become longer and thicker. These changes cause the voice to become hoarse.
- (iv) Appearance of hair in areas such as underarms, face, hands, and legs.
- (v) Appearance of acne as a result of excessive secretion of oil from skin.
- (vi) Testis grows and starts producing sperms in males, whereas in females, the ovary enlarges and starts producing matured eggs.

**Q5 :**

Prepare a table having two columns depicting names of endocrine glands and hormones secreted by them.

Answer :

Endocrine gland	Hormones
Testis	Testosterone
Ovary	Oestrogen
Thyroid	Thyroxin
Adrenal	Adrenalin
Pancreas	Insulin
Pituitary	Growth hormone

Q6 :

**What are sex hormones? Why are they named so? State their function.**

Answer :

Sex hormones are chemical substances produced by sex organs. For example, testosterone is the male sex hormone produced by the testis, and oestrogen is the female sex hormone produced by the ovary. These hormones affect the sexual features of an organism. Hence, they are known as sex hormones.

**Functions of sex hormones:**

**Testosterone:** This hormone brings about secondary sex characters in boys such as the growth of a beard, the voice becoming hoarse, development of reproductive organs, etc.

**Oestrogen:** This hormone is responsible for the development of secondary sexual characters in females such as the enlargement of breasts, development of female reproductive organs, etc.

Q7 :

Choose the correct option.

- (a) Adolescents should be careful about what they eat, because (i) proper diet develops their brains.  
(ii) proper diet is needed for the rapid growth taking place in their body.  
(iii) adolescents feel hungry all the time.  
(iv) taste buds are well developed in teenagers. (b) Reproductive age in women starts when their (i) menstruation starts.  
(ii) breasts start developing.  
(iii) body weight increases.  
(iv) height increases.
- (c) The right meal for adolescents consists of (i) chips, noodles, coke.  
(ii) *chapatti, dal, vegetables.*  
(iii) rice, noodles and burger.  
(iv) vegetable cutlets, chips and lemon drink.

**Answer :**

- (a) (ii) Adolescents should be careful about what they eat, because proper diet is needed for the rapid growth taking place in their body.
- (b) (i) Reproductive age in women starts when their menstruation starts.
- (c) (ii) The right meal for adolescents consists of *chapatti*, *dal*, vegetables.

**Q8 :**

**Write notes on - (a)  
Adam's apple.**

- (b) Secondary sexual characters.**
- (c) Sex determination in the unborn baby.**

**Answer :**

**(a) Adam's apple:**

In human males, the larynx grows larger during puberty and can be seen as a protruding part of the throat. This protrusion is known as the Adam's apple. In boys, under the influence of sex hormones, the larynx becomes prominent. As a result, the vocal cords become longer and thicker, causing the voice to become hoarse. However, in females, the larynx is of a small size and is hardly visible. Therefore, girls have a high pitched voice, while the voice of boys is low pitched.

**(b) Secondary sexual characters** are those features that help in distinguishing the male and the female body from each other.  
They are physical or behavioural characteristics that appear in humans at the time of puberty.

Secondary sexual characters in boys:

- (i) Appearance of moustache and beard.
- (ii) Appearance of chest hair.
- (iii) Growth of hair in genital area and other parts of the skin.

Secondary sexual character in girls:

- (i) Increase in breast size and darkening of the skin of nipples present at the tip of the breasts.
- (ii) Growth of hair in genital area and other body parts.

**(c) Sex determination in an unborn baby:**

The sex of a baby is determined by the type of male gamete that fuses with the female gamete.

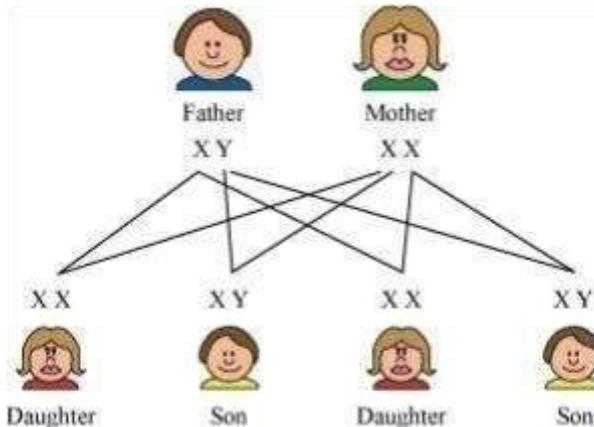
All human beings have 23 pairs of chromosomes in their nuclei. Out of these 23 pairs, the last pair is known as the sex chromosome.

The human males have 23 pairs of chromosomes including XY sex chromosomes. Therefore, the male gamete has 22 chromosomes and either an X or Y sex chromosome.

Male gametes can be of two types: 22+X or 22+Y

Females have 23 pairs of chromosomes including XX sex chromosomes. Therefore, their gametes can only have 22 chromosomes and one X sex chromosome.

Type of female gametes: 22+X



Thus, as the mother provides only X chromosome, the sex of the baby is determined by the type of male gamete (X or Y) that fuses with the X chromosome of the female.

**Q9 :**

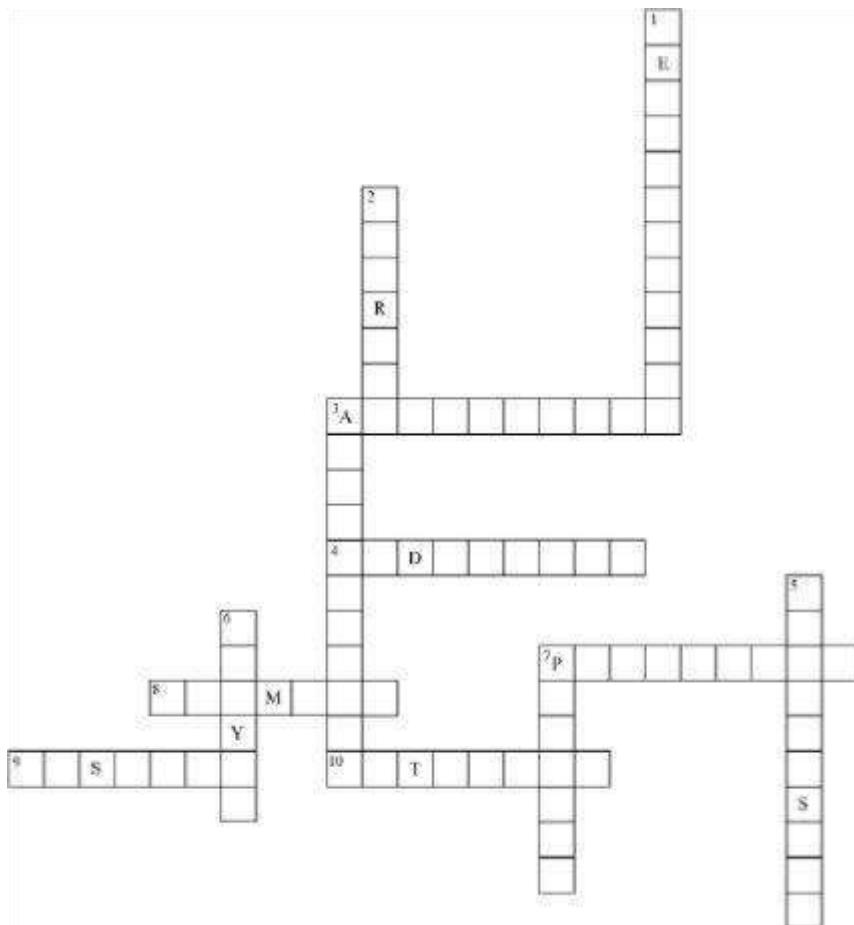
**Word game: Use the clues to work out the words.**

**Across**

3. Protruding voice box in boys
4. Glands without ducts
7. Endocrine gland attached to brain
8. Secretion of endocrine glands
9. Pancreatic hormone
10. Female hormone

**Down**

1. Male hormone
2. Secretes thyroxin
3. Another term for teenage
5. Hormone reaches here through blood stream
6. Voice box
7. Term for changes at adolescence



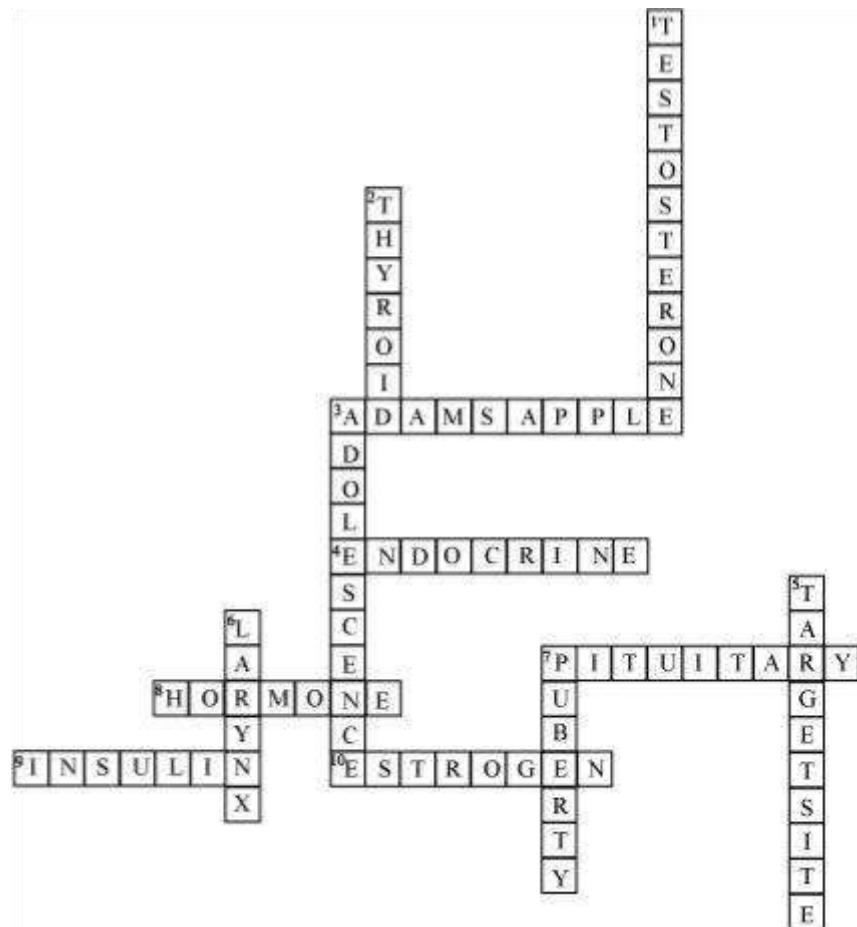
### **Answer :**

## Across

3. ADAM'S APPLE
  4. ENDOCRINE
  7. PITUITARY
  8. HORMONE
  9. INSULIN
  10. ESTROGEN

Down

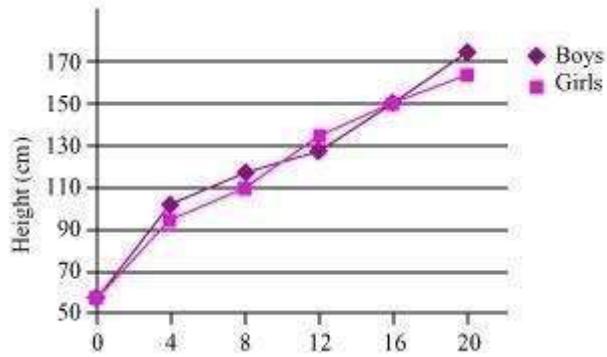
1. TESTOSTERONE
  2. THYROID
  3. ADOLESCENCE
  5. TARGET SITE
  6. LARYNX
  7. PUBERTY



Q10 :

The table below shows the data on likely heights of boys and girls as they grow in age. Draw graphs showing height and age for both boys and girls on the same graph paper. What conclusions can be drawn from these graphs?

Age (Years)	Height (cm)	
	Boys	Girls
0	53	53
4	96	92
8	114	110
12	129	133
16	150	150
20	173	165



**Answer :**

The graph depicts the relation between the age and height of both boys and girls. During puberty, there is a sudden increase in height of both boys and girls. On the basis of the above graph, it can be observed that during the age of 4-8 years, girls have less height as compared to boys. However, as soon as girls reach 12- 13 years, their height shows a sudden increase and becomes more than boys. In later years, growth in both sexes becomes stable. Growth during puberty is under the control of hormones.

# NCERT Solutions for Class 8 Science Chapter 11

## Force and Pressure

**Exercise :** Solutions of Questions on Page Number : 142

**Q1 :**

**Give two examples each of situations in which you push or pull to change the state of motion of objects.**

**Answer :**

Two examples of push force are as follows:

- (i) A heavy box at rest is pushed to move it from one room to another. This changes the state of motion of the box.
- (ii) A player pushes a football using his foot. This changes the state of motion of the ball.

Two examples of pull force are as follows:

- (i) Rope is pulled to draw water from a well. This changes the state of motion of the water bucket.
- (ii) A drawer is pulled to open it. This changes the state of motion of the drawer.

**Q2 :**

**Give two examples of situations in which applied force causes a change in the shape of an object.**

**Answer :**

Two examples of forces that cause a change in the shape of an object are as follows:

- (i) Squeezing of a plastic bottle changes the shape of the bottle.
- (ii) Deformation of clay by pressing it between the hands.

**Q3 :**

**Fill in the blanks in the following statements.**

- (a) To draw water from a well we have to \_\_\_\_\_ at the rope.
- (b) A charged body \_\_\_\_\_ an uncharged body towards it.
- (c) To move a loaded trolley we have to \_\_\_\_\_ it.
- (d) The north pole of a magnet \_\_\_\_\_ the north pole of another magnet.

**Answer :**

- (a) To draw water from a well we have to pull at the rope.
- (b) A charged body attracts an uncharged body towards it.
- (c) To move a loaded trolley we have to either push or pull it.
- (d) The north pole of a magnet repels the north pole of another magnet.

**Q4 :**

An archer stretches her bow while taking aim at the target. She then releases the arrow, which begins to move towards the target. Based on this information fill up the gaps in the following statements using the following terms.

muscular, contact, non-contact, gravity, friction, shape, attraction

- (a) To stretch the bow, the archer applies a force that causes a change in its \_\_\_\_\_.
- (b) The force applied by the archer to stretch the bow is an example of \_\_\_\_\_ force.
- (c) The type of force responsible for a change in the state of motion of the arrow is an example of a \_\_\_\_\_ force.
- (d) While the arrow moves towards its target, the forces acting on it are due to \_\_\_\_\_ and that due to \_\_\_\_\_ of air.

**Answer :**

- (a) To stretch the bow, the archer applies a force that causes a change in its shape.
- (b) The force applied by the archer to stretch the bow is an example of muscular force.
- (c) The type of force responsible for a change in the state of motion of the arrow is an example of a contact force.
- (d) While the arrow moves towards its target, the forces acting on it are due to gravity and that due to friction of air.

**Q5 :**

In the following situations identify the agent exerting the force and the object on which it acts. State the effect of the force in each case.

- (a) Squeezing a piece of lemon between the fingers to extract its juice.
- (b) Taking out paste from a toothpaste tube.
- (c) A load suspended from a spring while its other end is on a hook fixed to a wall.
- (d) An athlete making a high jump to clear the bar at a certain height.

**Answer :**

- (a) In squeezing a piece of lemon, we make use of muscular force to extract its juice. This muscular force acts on the lemon. As a result, the shape of the lemon gets changed.
- (b) We use our muscular force to take out paste from a toothpaste tube. The muscular force acts on the toothpaste tube. As a result, the shape of the tube gets changed.
- (c) Here, the suspended load exerts a force on the spring and pushes the spring downwards. As a result, the spring gets stretched. Hence, its shape gets changed.
- (d) An athlete pushes the ground with his feet. His feet exert a muscular force on the ground. This allows him to jump over the bar. As a result, his state of motion gets changed.

**Q6 :**

A blacksmith hammers a hot piece of iron while making a tool. How does the force due to hammering affect the piece of iron?

**Answer :**

When a blacksmith hammers a hot piece of iron, he uses his muscular force. This muscular force changes the shape of the iron so that it can be given a desired shape.

**Q7 :**

An inflated balloon was pressed against a wall after it has been rubbed with a piece of synthetic cloth. It was found that the balloon sticks to the wall. What force might be responsible for the attraction between the balloon and the wall?

**Answer :**

On rubbing an inflated balloon with a piece of synthetic cloth, it becomes charged. A charged body attracts an uncharged body. When this charged balloon is pressed against a wall, it sticks to the wall. The force acting between the charged balloon and the wall is the electrostatic force.

**Q8 :**

Name the forces acting on a plastic bucket containing water held above ground level in your hand. Discuss why the forces acting on the bucket do not bring a change in its state of motion.

**Answer :**

We make use of muscular force to hold a bucket of water above the ground. This muscular force acts against the force of gravity that pulls the bucket towards the ground. The two forces are equal in magnitude but opposite in direction. Therefore, the net force on the bucket is zero. Hence, there is no change in its state of motion.

**Q9 :**

A rocket has been fired upwards to launch a satellite in its orbit. Name the two forces acting on the rocket immediately after leaving the launching pad.

**Answer :**

The two forces acting on the rocket are the force of gravity, which pulls the rocket towards the ground, and the force of friction due to earth's atmosphere, which opposes its motion.

**Q10 :**

When we press the bulb of a dropper with its nozzle kept in water, air in the dropper is seen to escape in the form of bubbles. Once we release the pressure on the bulb, water gets filled in the dropper. The rise of water in the dropper is due to

- (a) pressure of water.
- (b) gravity of the earth.
- (c) shape of rubber bulb
- (d) atmospheric pressure

**Answer :**

(d) The rise of water in the dropper is due to atmospheric pressure.

The rise of water in a dropper is due to atmospheric pressure. When all the air escapes from the nozzle, the atmospheric pressure, which is acting on the water, forces the water to fill the nozzle of the dropper.

# NCERT Solutions for Class 8 Science Chapter 12

## Friction

Exercise : Solutions of Questions on Page Number : 155

Q1 :

Fill in the blanks.

- (a) Friction opposes the \_\_\_\_\_ between the surfaces in contact with each other.
- (b) Friction depends on the \_\_\_\_\_ of surfaces.
- (c) Friction produces \_\_\_\_\_.
- (d) Sprinkling of powder on the carrom board \_\_\_\_\_ friction.
- (e) Sliding friction is \_\_\_\_\_ than the static friction.

Answer :

- (a) Friction opposes the motion between the surfaces in contact with each other.
- (b) Friction depends on the nature of surfaces.
- (c) Friction produces heat.
- (d) Sprinkling of powder on the carrom board reduces friction.
- (e) Sliding friction is less than the static friction.

Q2 :

Four children were asked to arrange forces due to rolling, static and sliding frictions in a decreasing order. Their arrangements are given below. Choose the correct arrangement.

- (a) rolling, static, sliding
- (b) rolling, sliding, static
- (c) static, sliding, rolling
- (d) sliding, static, rolling

Answer :

- (c) static, sliding, rolling

Friction comes into play when irregularities present in the surfaces of two objects in contact get interlocked with each other. Static friction comes into play when we try to move an object which is at rest. Sliding friction comes into play when an object slides over the surface of another object. In sliding friction, the time given for interlocking is very small. Hence, interlocking is not strong. Therefore, less force is required to overcome this interlocking. Because of this reason, sliding friction is less than static friction. Similarly, the area of contact in case of rolling friction is smallest as compared to static or sliding friction. This area of contact changes gradually because of rolling. Hence, rolling friction is lesser than both static and sliding friction. Thus, the correct sequence is - static, sliding, rolling.

Q3 :

Alida runs her toy car on dry marble floor, wet marble floor, newspaper and towel spread on the floor. The force of friction acting on the car on different surfaces in increasing order will be

- (a) wet marble floor, dry marble floor, newspaper and towel.
- (b) newspaper, towel, dry marble floor, wet marble floor.
- (c) towel, newspaper, dry marble floor, wet marble floor
- (d) wet marble floor, dry marble floor, towel, newspaper

**Answer :**

(a) wet marble floor, dry marble floor, newspaper and towel

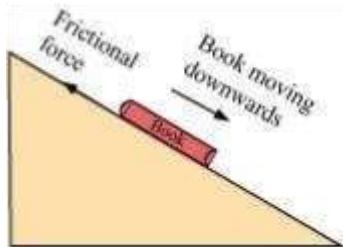
Force of friction depends on the nature of surfaces in contact. The rougher the surface, the more is the friction between the surfaces in contact and vice-versa. Roughness present in the given surfaces can be arranged in an ascending order as wet marble floor, dry marble floor, newspaper and towel. Hence, the correct sequence of these surfaces when arranged according to the increase in the force of friction acting on the car is - wet marble floor, dry marble floor, newspaper and towel.

**Q4 :**

**Suppose your writing desk is tilted a little. A book kept on it starts sliding down. Show the direction of frictional force acting on it.**

**Answer :**

When a book slides on the writing desk, a frictional force acts between the book and the surface of the desk. The direction of frictional force on the book is opposite to the direction of its motion and acts in upward direction, as shown in the following figure.



**Q5 :**

**You spill a bucket of soapy water on a marble floor accidentally. Would it make it easier or more difficult for you to walk on the floor? Why?**

**Answer :**

We are able to walk because of the friction present between our feet and the ground. In order to walk, we push the ground in the backward direction with our feet. The force of friction pushes it in the forward direction and allows us to walk. The force of friction between the ground and feet decreases when there is soapy water spilled on the floor. Hence, it becomes difficult to walk on the soapy floor.

**Q6 :**

**Explain why sportsmen use shoes with spikes.**

**Answer :**

Sportsmen use shoes with spikes because these shoes give them a better grip while running. This is because the force of friction between the shoes and the ground increases with the help of spikes.

**Q7 :**

**Iqbal has to push a lighter box and Seema has to push a similar heavier box on the same floor. Who will have to apply a larger force and why?**

**Answer :**

Force of friction arises because of interlocking of irregularities on the two surfaces in contact. When a heavy object is placed on the floor, the interlocking of irregularities on the surfaces of box and floor become strong. This is because the two surfaces in contact are pressed harder. Hence, more force is required to overcome the interlocking. Thus, to push the heavier box, Seema has to apply a greater force than Iqbal.

**Q8 :**

**Explain why sliding friction is less than static friction.**

**Answer :**

Friction comes into play when irregularities present in the surfaces of two objects in contact get interlocked with each other. In sliding, the time given for interlocking is very small. Hence, interlocking is not strong. Therefore, less force is required to overcome this interlocking. Because of this reason, sliding friction is less than static friction.

**Q9 :**

**Give examples to show that friction is both a friend and a foe.**

**Answer :**

Advantages of friction:

- (i) We are able to walk because of friction.
- (ii) Friction between the tip of the pen and a paper allows us to write.

Disadvantages of friction:

- (i) Tyres and soles of shoes wear out because of friction.
- (ii) Friction between the different parts of machines produces heat. This can damage the machines.

**Q10 :**

**Explain why objects moving in fluids must have special shapes.**

**Answer :**

When a body moves through a fluid, it experiences an opposing force which tries to oppose its motion through the fluid. This opposing force is known as the drag force. This frictional force depends on the shape of the body. By giving objects a special shape, the force of friction acting on it can be minimised. Hence, it becomes easier for the body to move through the fluid.

# NCERT Solutions

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## Class-VIII (CHAPTER-13)

### SOUND

#### Answers

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1. (d) air, liquid and solids

2. (a) Baby girl.

3. (a) T

(b) F

(c) F

(d) T

(e) F

(f) F

(g) T

4. Fill in the blanks with suitable words.

(a) Time taken by an object to complete one oscillation is called **time period**.

(b) Loudness is determined by the **amplitude**.

(c) The unit of frequency is **hertz**.

(d) Unwanted sound is called **noise**.

(e) Shrillness of a sound is determined by the **pitch** of vibration.

5. No. of oscillations = 40.

Time- taken = 4 sec.

Frequency = no. of oscillation / time-taken

$$= 40/4 = 10 \text{ Hz.}$$

6. No- of vibration in 1 second = 500.

Therefore, frequency = 500Hz.

Time-period = 1 / frequency

$$= 1/500 = 0.002 \text{ second.}$$

7. (a) Dholak- Stretched membrane.

(b) Sitar- Stretched string

(c) Flute- Air column.

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## NCERT Solutions

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8. The unpleasant sound is called noise. Whereas pleasant sound is called music. Noise can produce so many health hazards, whereas noise music brings about soothing effect.

Yes, music can become a noise sometimes when the musical instruments produce very high volume sounds.

9. The sources of noise pollution are:

- (i) The sound produced by buses and trucks.
- (ii) The sound produced at the construction site.
- (iii) The sound produced by playing of T.V., radio and loudspeaker.
- (iv) Bursting of crackers, and sound of big machines in the factories.

10. The noise pollution may cause many health related problems. Lacks of sleep, hypertension, anxiety etc. are some of the problems that may caused due to noise pollution. Moreover, a person who is exposed to a loud sound continuously may get temporary or permanent deafness.

11. I would suggest my parents to buy the house which is three lanes away from the roadside. This would protect us from noise pollution which is maximum at roadside building.

12. The other name of larynx is voice box. It is present at the upper end of the windpipe. The function of larynx is to produce sound.

13. The light travels at the speed of 3,00,000 km/s which is very large in comparison to the speed of sound which travels at the rate of 330 m/s in air. That is why lightening is seen earlier and thunder is heard later.

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# NCERT Solutions for Class 8 Science Chapter 14

## Chemical Effects of Electric Current

**Exercise :** Solutions of Questions on Page Number : 180

**Q1 :**

Fill in the blanks.

- Most liquids that conduct electricity are solutions of \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- The passage of an electric current through a solution causes \_\_\_\_\_ effects.
- If you pass current through copper sulphate solution, copper gets deposited on the plate connected to the \_\_\_\_\_ terminal of the battery.
- The process of depositing a layer of any desired metal on another material by means of electricity is called \_\_\_\_\_.

**Answer :**

(a) Most liquids that conduct electricity are solutions of acids, bases and salts.

(The solutions of acids, bases or salts are conducting in nature. They allow the current to pass through.) (b)

The passage of an electric current through a solution causes chemical effects.

(When an electric current passes through a solution, the solution decomposes into its positive and negative ions. This process of decomposition of the solution is a chemical effect.)

(c) If you pass current through copper sulphate solution, copper gets deposited on the plate connected to the negative terminal of the battery.

(When an electric current passes through a copper sulphate solution, the solution decomposes into positively charged copper ions and negatively charged sulphate ions. These positively charged copper ions get attracted towards the plate which is connected to the negative terminal of a battery.)

(d) The process of depositing a layer of any desired metal on another material by means of electricity is called electroplating.

**Q2 :**

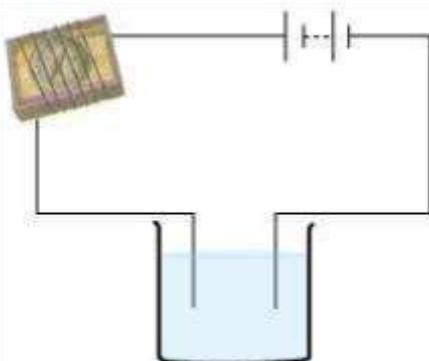
When the free ends of a tester are dipped into a solution, the magnetic needle shows deflection. Can you explain the reason?

**Answer :**

The deflection in the compass needle shows that current is flowing through the wounded wire and hence, through the circuit. The circuit is complete since free ends of the tester are dipped in a solution. The solution is certainly a conducting solution. This is the reason why the compass needle shows a deflection.

**Q3 :**

Name three liquids, which when tested in the manner shown in Fig. 14.9, may cause the magnetic needle to deflect.



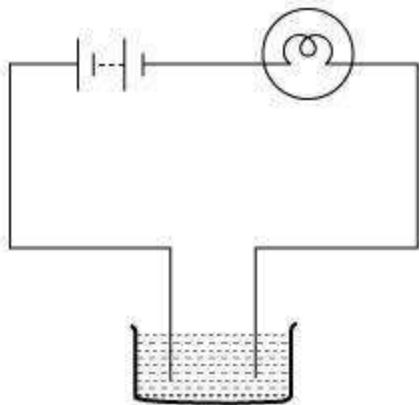
**Fig. 14.9**

**Answer :**

Liquids like lemon juice, salt water and vegetable oil allow electricity to pass through them. Hence, these liquids can be used as in the beaker to show the given effect.

**Q4 :**

The bulb does not glow in the setup shown in Fig. 14.10. List the possible reasons. Explain your answer.



**Fig. 14.10**

**Answer :**

The bulb may not glow because of the following reasons:

- (i) Liquid in the beaker is non-conducting. In such case, the electric current would not be able to pass through the liquid. Hence, the circuit is not complete.
- (ii) Electric current in the circuit is very weak. This can happen if the material used for making the circuit is not a good conductor of electricity or the battery does not have sufficient energy to generate electricity.

**Q5 :**

A tester is used to check the conduction of electricity through two liquids, labelled A and B. It is found that the bulb of the tester glows brightly for liquid A while it glows very dimly for liquid B. You would conclude that (i) liquid A is a better conductor than liquid B.

- (ii) liquid B is a better conductor than liquid A.
- (iii) both liquids are equally conducting.

**(iv) conducting properties of liquid cannot be compared in this manner.**

**Answer :**

(i) Liquid A is a better conductor than liquid B.

The amount of current flowing through a conducting solution depends on the conductivity of the solution. With more conductivity, more current passes through the solution and vice-versa. Hence, the conductivity of liquid A is more than the conductivity of liquid B.

**Q6 :**

**Does pure water conduct electricity? If not, what can we do to make it conducting?**

**Answer :**

No. Pure water does not conduct electricity. This is because pure water is devoid of any salts. Pure water can conduct electricity when a pinch of common salt is added to it, as salt solution is conducting in nature.

**Q7 :**

**In case of a fire, before the firemen use the water hoses, they shut off the main electrical supply for the area. Explain why they do this.**

**Answer :**

Water may conduct electricity. If the electrical supply for the area is not shut off and water is poured over electrical appliances, then electricity may pass through water and harm the firemen. That is why, in case of a fire, the firemen shut off the main electrical supply for the area before they use the water hoses.

**Q8 :**

**In case of a fire, before the firemen use the water hoses, they shut off the main electrical supply for the area. Explain why they do this.**

**Answer :**

Water may conduct electricity. If the electrical supply for the area is not shut off and water is poured over electrical appliances, then electricity may pass through water and harm the firemen. That is why, in case of a fire, the firemen shut off the main electrical supply for the area before they use the water hoses.

**Q9 :**

**A child staying in a coastal region tests the drinking water and also the seawater with his tester. He finds that the compass needle deflects more in the case of seawater. Can you explain the reason?**

**Answer :**

Sea water contains more dissolved salts than the drinking water. Hence, it is more conducting than the drinking water. Because of this reason, the compass needle deflects more in seawater than in the drinking water.

**Q10 :**

**Is it safe for the electrician to carry out electrical repairs outdoors during heavy downpour? Explain.**

**Answer :**

No. It is not safe to repair electrical appliances outdoors during heavy downpour. This is because rain water contains dissolved salts. Therefore, rain water can conduct electricity. The electrician may get electrical shocks while working outdoors during rain.

**Q11 :**

Paheli had heard that rain water is as good as distilled water. So, she collected some rain water in a clean glass tumbler and tested it using a tester. To her surprise, she found that the compass needle showed deflection. What could be the reasons?

**Answer :**

Rain water contains dissolved salts. This makes it a conducting solution. There are no dissolved salts present in the distilled water. Hence, rain water can allow electricity to pass through it while distilled water cannot.

**Q12 :**

**Prepare a list of objects around you that are electroplated.**

**Answer :**

Examples of electroplated objects are as follows:

- (i) Chromium plating is done on different parts of cars, buses and motor cycles to give them shiny appearance.
  - ii. A fine layer of gold is deposited on the silver ornaments and they are called gold-plated ornaments.
  - ii. Iron used in constructing a building is coated with a layer of zinc. This protects iron from corrosion and rusting.

**Q13 :**

**The process that you saw in Activity 14.7 is used for purification of copper. A thin plate of pure copper and a thick rod of impure copper are used as electrodes. Copper from impure rod is sought to be transferred to the thin copper plate. Which electrode should be attached to the positive terminal of the battery and why?**

**Answer :**

Copper ion is positively charged. It is attracted towards the plate which is connected to the negative terminal of the battery. As copper ions are transferred to the thin copper plate, this thin pure copper plate must be connected to the negative terminal of the battery. Consequently, impure copper rod is connected to the positive terminal of the battery.

# NCERT Solutions for Class 8 Science Chapter 15

## Some Natural Phenomena

**Exercise :** Solutions of Questions on Page Number : 197

**Q1 :**

Which of the following cannot be charged easily by friction?

- (a) A plastic scale
- (b) A copper rod
- (c) An inflated balloon
- (d) A woollen cloth

**Answer :**

- (b) A copper rod

Only non-conducting materials can be easily charged by friction. Copper is a highly conducting material. Therefore, a copper rod cannot be charged easily by friction.

**Q2 :**

When a glass rod is rubbed with a piece of silk cloth the rod  
(a) and the cloth both acquire positive charge.

- (b) becomes positively charged while the cloth has a negative charge.
- (c) and the cloth both acquire negative charge.
- (d) becomes negatively charged while the cloth has a positive charge.

**Answer :**

- (b) The rod becomes positively charged, while the cloth has a negative charge.

When an object is charged by rubbing it against another object, the two objects get oppositely charged. By convention, it is considered that the charge acquired by the glass rod is positive and the charge acquired by the cloth is negative. Therefore, the rod becomes positively charged and the cloth becomes negatively charged.

**Q3 :**

Write T against true and F against false in the following statements.

- (a) Like charges attract each other. (T / F)
- (b) A charged glass rod attracts a charged plastic straw. (T / F)
- (c) Lightning conductor cannot protect a building from lightning. (T/F)
- (d) Earthquakes can be predicted in advance. (T / F)

**Answer :**

- (a) False

Like charges repel each other. It is the unlike charges that attract each other.

- (b) True

A charged glass rod has positive charges on its surface while a charged plastic straw has negative charges on its surface. Since unlike charges attract each other, a charged glass rod attracts a charged plastic straw.

(c) False

During a lightning, the lightning conductor conducts all the atmospheric charges to the Earth directly, leaving the building safe. Hence, lightning conductors protect a building from lightning.

(d) False

Although the causes of earthquakes is known, but no instrument could be invented to detect it till now. Hence, earthquakes cannot be predicted in advance.

**Q4 :**

**Sometimes, a crackling sound is heard while taking off a sweater during winters. Explain.**

**Answer :**

When a sweater is taken off, the woollen sweater gets charged because of the friction between the sweater and the body. Hence, one can hear a crackling sound during the given process.

**Q5 :**

**Explain why a charged body loses its charge if we touch it with our hand.**

**Answer :**

When we touch a charged object, our body conducts its charges to the earth. That is why a charged body loses its charge, if we touch it with our hand. This phenomenon is known as electric discharge.

**Q6 :**

**Name the scale on which the destructive energy of an earthquake is measured. An earthquake measures 3 on this scale. Would it be recorded by a seismograph? Is it likely to cause much damage?**

**Answer :**

The destructive energy of an earthquake is measured by the Richter scale. This scale has the readings from 1 to 10.

The reading of magnitude 3 on the Richter scale would be recorded by a seismograph.

If the Richter scale gives a reading of magnitude 3, then the earthquake is not likely to cause much damage. Generally, earthquake of magnitudes higher than 5 is considered destructive in nature.

**Q7 :**

**Suggest three measures to protect ourselves from lightning.**

**Answer :**

Protective measures against lightning are as follows:

- (i) Stay in a completely closed place. If you are moving in a car, then remain there until the lightning is over. Close the windows of the car immediately.
- (ii) Do not touch any electrical wires, telephone cables, metal pipes, etc.
- (iii) Do not bathe in running water. This may cause an electric shock.

**Q8 :**

**Explain why a charged balloon is repelled by another charged balloon whereas an uncharged balloon is attracted by another charged balloon?**

**Answer :**

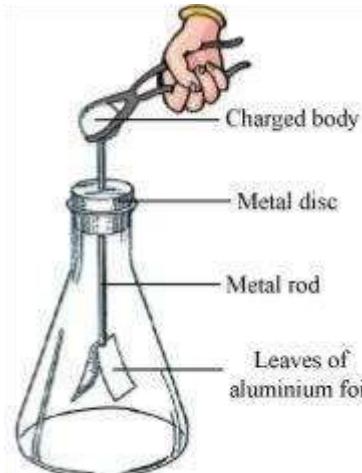
The nature of charges present on the surface of charged balloons are similar. Since like charges repel each other, two charged balloons repel each other. When a charged body is brought near an uncharged body, the uncharged body acquires charges on its surface caused by the induction of charges. The charges are of opposite nature in relation to the charged body. Since unlike charges attract each other, a charged body always attracts an uncharged body. Hence, an uncharged balloon is attracted by another charged balloon.

**Q9 :**

**Describe with the help of a diagram an instrument which can be used to detect a charged body.**

**Answer :**

An electroscope can be used to detect whether a body is charged or not. The following figure shows a simple electroscope.



It consists of a metal rod. At one end of the rod, two leaves of aluminium foil are fixed and at the other end, there is a metal disc. The leaves of aluminium foil are placed inside a conical flask and the flask is corked to isolate the leaves from air.

When the metal disc is touched with a charged body, the aluminium strips move away from each other. This happens because some of the charges of the body are transferred to the strips through the metal rod. This method of charging a body is called charging by conduction. The nature of charges on both the leaves and the charged body are the similar. Hence, both the leaves of the aluminium foil will move away from each other. If the body was not charged, then the leaves of the foil would remain as they were before. They would not repel each other.

**Q10 :**

**List three states in India where earthquakes are more likely to strike.**

**Answer :**

The three states in India where earthquakes are more likely to strike are Jammu and Kashmir, Gujarat, and Assam.

**Q11 :**

**Suppose you are outside your home and an earthquake strikes. What precaution would you take to protect yourself?**

**Answer :**

Some of the precautions are as follows:

- (i) Try to find an open field away from tall buildings, installations, tall trees, and electric wires and poles.
- (ii) If travelling in a bus or a car, then do not come out when an earthquake strikes. Ask the driver to drive in an open field.

**Q12 :**

**The weather department has predicted that a thunderstorm is likely to occur on a certain day. Suppose you have to go out on that day. Would you carry an umbrella? Explain.**

**Answer :**

No. We should not carry an umbrella in a thunderstorm. During thunderstorms, which are accompanied with lightning, electric discharge from the clouds can travel through the metallic rod of the umbrella. This may give an electric shock to the person who is carrying it. Hence, it is not safe to carry an umbrella during lightning.

# NCERT Solutions for Class 8 Science Chapter 16

## Light

**Exercise :** Solutions of Questions on Page Number : 212

**Q1 :**

**Suppose you are in a dark room. Can you see objects in the room? Can you see objects outside the room? Explain.**

**Answer :**

If we are in a dark room, then it is not possible for us to see objects in the room. However, objects outside the room are visible to us.

An object becomes visible when light reaches our eye after being reflected from the object. If there is no light in the room, then the objects inside the room cannot reflect any light. Hence, we cannot see in a dark room. If there is light present outside the room, then we can see the objects outside the room.

**Q2 :**

**Differentiate between regular and diffused reflection. Does diffused reflection mean the failure of the laws of reflection?**

**Answer :**

Regular reflection takes place from a smooth or a regular surface. In regular reflection, all reflected rays are parallel to each other for parallel incident rays. Irregular or diffused reflection takes place from an irregular surface. In diffused reflection, the reflected rays are not parallel to each other for parallel incident rays. This happens because of the presence of irregular microscopic surfaces. Hence, parallel incident rays reflect in different directions. However, each ray obeys the laws of reflection. Therefore, laws of reflections are not violated in diffused or irregular reflections.

**Q3 :**

**Mention against each of the following whether regular or diffused reflection will take place when a beam of light strikes. Justify your answer in each case.**

- (a) Polished wooden table (b) Chalk powder
- (c) Cardboard surface (d) Marble floor with water spread over it
- (e) Mirror (f) Piece of paper

**Answer :**

(a) Polished wooden table → Regular reflection

A polished surface is an example of a smooth surface. A polished wooden table has a smooth surface. Hence, reflections from the polished table will be regular.

(b) Chalk powder → Diffused reflection

Chalk power spread on a surface is an example of an irregular surface. It is not smooth. Therefore, diffused reflection will take place from chalk powder.

(c) Cardboard surface → Diffused reflection

Cardboard surface is also an example of an irregular surface. Hence, diffused reflection will take place from a cardboard surface.

(d) Marble floor with water spread over it → Regular reflection

Marble floor with water spread over it is an example of a regular surface. This is because water makes the marble surface smooth. Hence, regular reflection will take place from this surface.

(e) Mirror → Regular reflection

Mirror has a smooth surface. Therefore, it will give a regular reflection.

(f) Piece of paper → Diffused reflection

Although a piece of paper may look smooth, but it has many irregularities on its surface. Due to this reason, it will give a diffused reflection.

**Q4 :**

**State the laws of reflection.**

**Answer :**

Laws of reflection:

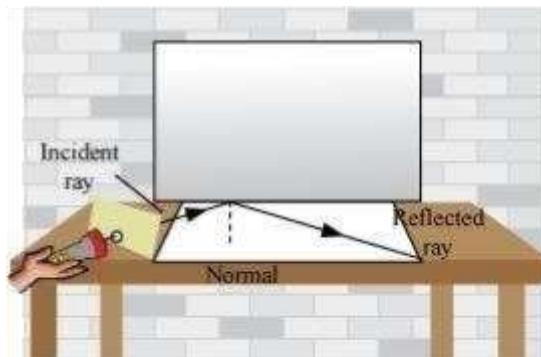
- (i) The angle of reflection is always equal to the angle of incidence.
- (ii) The incident ray, the reflected ray and the normal to the reflective surface at the point of incidence all lie in the same plane.

**Q5 :**

**Describe an activity to show that the incident ray, the reflected ray and the normal at the point of incidence lie in the same plane.**

**Answer :**

Place a plane mirror on the table. Take a paper sheet and make a small hole in its centre. Make sure that the light in the room is not bright. Hold the sheet normal to the table. Take another sheet and place it on the table in contact with the vertical mirror. Draw a normal line on the second sheet from the mirror. Now, light a torch on the mirror through the small hole such that the ray of light falls on the normal at the bottom of the mirror. When the ray from this hole is incident on the mirror, it gets reflected in a certain direction. You can easily observe the incident ray, reflected ray and the normal to the mirror at the point of incidence on the sheet placed on the table. This shows that the incident ray, the reflected ray, and the normal to the surface at the point of incidence all lie in the same plane.



**Q6 :**

**Fill in the blanks in the following.**

- (a) A person 1 m in front of a plane mirror seems to be \_\_\_\_\_ m away from his image.
- (b) If you touch your \_\_\_\_\_ ear with your right hand in front of a plane mirror, it will be seen in the mirror that your right ear is touched with your \_\_\_\_\_.
- (c) The size of the pupil becomes \_\_\_\_\_ when you see in dim light.
- (d) Night birds have \_\_\_\_\_ cones than rods in their eyes.

**Answer :**

- (a) A person 1 m in front of a plane mirror seems to be 2 m away from his image.

(Object distance and image distance are the same from a plane mirror. The image of a person 1 m in front of a mirror is 1 m back to the mirror. Hence, the image is  $1 + 1 = 2$  m away from the person.)

(b) If you touch your left ear with your right hand in front of a plane mirror, it will be seen in the mirror that your right ear is touched with your left hand.

(This is because of lateral inversion of images formed in a plane mirror.) (c)

The size of the pupil becomes large when you see in dim light.

(In dim light, the amount of light entering the eye is very little. To increase the amount of light, the pupil expands.) (d)

Night birds have less cones than rods in their eyes.

(Night birds can see in the night, but not in the day. They have on their retina a large number of rod cells and only a few cones.)

**Q7 :**

**Angle of incidence is equal to the angle of reflection.**

- (a) Always**
- (b) Sometimes**
- (c) Under special conditions**
- (d) Never**

**Answer :**

(a) The angle of incidence is always equal to the angle of reflection. This is the first law of reflection.

**Q8 :**

**Image formed by a plane mirror is**

- (a) virtual, behind the mirror and enlarged.**
- (b) virtual, behind the mirror and of the same size as the object.**
- (c) real at the surface of the mirror and enlarged.**
- (d) real, behind the mirror and of the same size as the object.**

**Answer :**

(b) Image formed by a plane mirror is virtual, behind the mirror and of the same size as the object.

The image formed by a plane mirror is of the same size as the object. The image is formed behind the mirror. The image cannot be obtained on a screen. Hence, it is a virtual image.

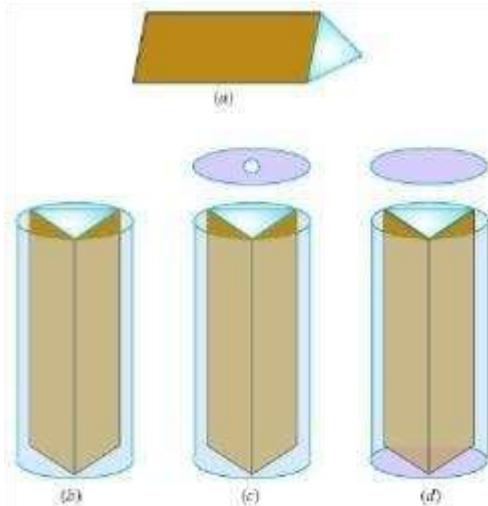
**Q9 :**

**Describe the construction of a kaleidoscope.**

**Answer :**

Construction of a kaleidoscope:

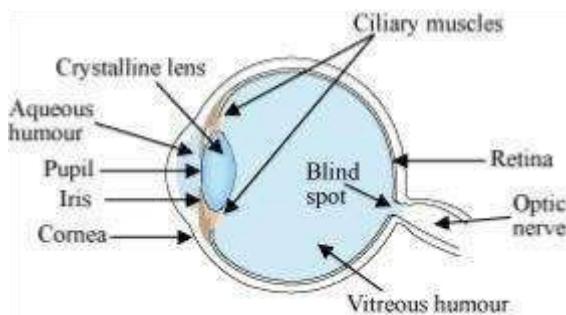
Three rectangular mirror strips of dimensions 15cm x 4cm (l x b) are joined together to form a prism (*fig a*). This prism is fixed into a circular cardboard tube. The circular cardboard tube should be slightly longer than the prism (*fig b*). This circular tube is now closed at one end with a cardboard disc. This disc has a hole in it through which we can see (*fig c*). At the other end of the circular tube, a plane glass plate is fixed. It is important that this glass plate touches the prism mirrors. On this glass plate, several small and broken pieces of coloured glass are placed. This end is now closed by a round glass plate allowing enough space for the coloured glass pieces to move (*fig d*).



**Q10 :**

Draw a labelled sketch of the human eye.

**Answer :**



**Q11 :**

Gurmit wanted to perform Activity 16.8 using a laser torch. Her teacher advised her not to do so. Can you explain the basis of the teacher's advice?

**Answer :**

Laser light is harmful for the human eyes, because its intensity is very high. It can cause damage to the retina and lead to blindness. Hence, it is advisable not to look at a laser beam directly.

**Q12 :**

Explain how you can take care of your eyes.

**Answer :**

To protect our eyes, the given points should be taken into account:

- Visit an eye specialist regularly.
- Avoid reading in dim light and very bright light.

- (iii) Avoid direct exposure of sunlight to the eye.
- (iv) Clean your eyes with cold water quickly if dust particles or small insects enter your eye. Do not rub your eyes.
- (v) Maintain a distance of at least 25 cm between the book and your eyes while reading.

**Q13 :**

**What is the angle of incidence of a ray if the reflected ray is at an angle of  $90^\circ$  to the incident ray?**

**Answer :**

If the reflected ray is at an angle of  $90^\circ$  to the incident ray, then the angle of incidence is  $45^\circ$ . According to the law of reflection, the angle of incidence is equal to the angle of reflection. Therefore, the angle of incidence and the angle of reflection both are  $\frac{90^\circ}{2} = 45^\circ$ .

**Q14 :**

**How many images of a candle will be formed if it is placed between two parallel plane mirrors separated by 40 cm?**

**Answer :**

Infinite or multiple images of the candle will be formed because of multiple reflections between the mirrors. When two mirrors are placed parallel to each other, then infinite numbers of images are formed.

**Q15 :**

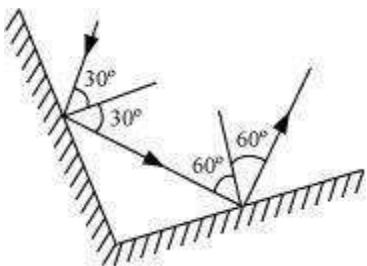
**Two mirrors meet at right angles. A ray of light is incident on one at an angle of  $30^\circ$  as shown in Fig. 16.19. Draw the reflected ray from the second mirror.**



*Fig. 16.19*

**Answer :**

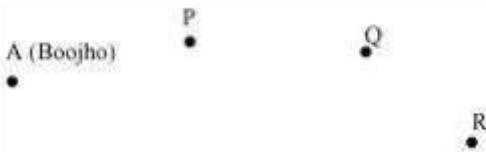
The first law of reflection is used to obtain the path of reflected light.



It can be observed that the given ray of light will reflect from the second mirror at an angle  $60^\circ$ .

**Q16 :**

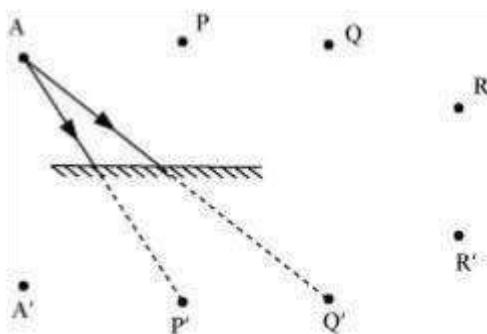
Boojho stands at A just on the side of a plane mirror as shown in Fig. 16.20. Can he see himself in the mirror? Also can he see the image of objects situated at P, Q and R?



*Fig. 16.20*

**Answer :**

A plane mirror forms a virtual image behind the mirror. The image is as far behind the mirror as the object is in front of it. A cannot see his image because the length of the mirror is too short on his side. However, he can see the objects placed at points P and Q, but cannot see the object placed at point R (as shown in the given figure).



**Q17 :**

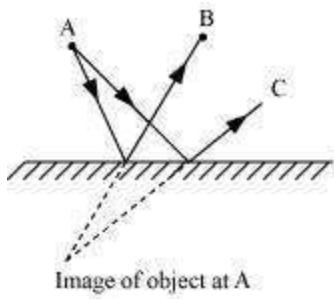
- Find out the position of the image of an object situated at A in the plane mirror (Fig. 16.21).
- Can Paheli at B see this image?
- Can Boojho at C see this image?
- When Paheli moves from B to C, where does the image of A move?



*Fig. 16.21*

**Answer :**

- Image of the object placed at A is formed behind the mirror. The distance of the image from the mirror is equal to the distance of A from the mirror. Image of A is shown in the given figure.



- (b) Yes. Paheli at B can see this image.
- (c) Yes. Boojho at C can see this image.
- (d) Image of the object at A will not move. It will remain at the same position when Paheli moves from B to C.

# NCERT Solutions for Class 8 Science Chapter 17

## Stars and the Solar System

**Exercise :** Solutions of Questions on Page Number : 234

**Q1 :**

**Which of the following is NOT a member of the solar system?**

- (a) An asteroid
- (b) A satellite
- (c) A constellation
- (d) A comet

**Answer :**

- (c) Constellation

A constellation is not a member of the solar system. Constellations are groups of stars that form recognisable shapes.

**Q2 :**

**Which of the following is NOT a planet of the sun?**

- (a) Sirius
- (b) Mercury
- (c) Saturn
- (d) Earth

**Answer :**

- (a) Sirius

Sirius is a star and not a planet of the sun.

**Q3 :**

**Phases of the moon occur because**

- (a) we can see only that part of the moon which reflects light towards us.
- (b) our distance from the moon keeps changing.
- (c) the shadow of the Earth covers only a part of the moon's surface.
- (d) the thickness of the moon's atmosphere is not constant.

**Answer :**

- (a) Phases of the moon occur because we can see only that part of the moon which reflects light towards us.

Moon does not produce its own light. We are able to see the moon because the sunlight falling on it gets reflected towards us. Thus, we see only that part of the moon from which the light of the sun gets reflected towards us.

**Q4 :**

**Fill in the blanks:**

- (a) The planet which is farthest from the sun is \_\_\_\_\_.
- (b) The planet which appears reddish in colour is \_\_\_\_\_.
- (c) A group of stars that appear to form a pattern in the sky is known as a \_\_\_\_\_.
- (d) A celestial body that revolves around a planet is known as a \_\_\_\_\_.
- (e) Shooting stars are actually not \_\_\_\_\_.
- (f) Asteroids are found between the orbits of \_\_\_\_\_ and \_\_\_\_\_.

**Answer :**

- (a) The planet which is farthest from the sun is Neptune.
- (b) The planet which appears reddish in colour is Mars.
- (c) A group of stars that appear to form a pattern in the sky is known as a constellation.
- (d) A celestial body that revolves around a planet is known as a satellite.
- (e) Shooting stars are actually not stars.  
(Shooting stars are not stars, they are meteors)
- (f) Asteroids are found between the orbits of Mars and Jupiter.  
(Asteroids occupy a large gap between the orbits of Mars and Jupiter)

**Q5 :**

Mark the following statement as true (T) or false (F).

- (a) Pole star is a member of the solar system. ( )
- (b) Mercury is the smallest planet of the solar system. ( )
- (c) Uranus is the farthest planet in the solar system. ( )
- (d) INSAT is an artificial satellite. ( )
- (e) There are nine planets in the solar system. ( )
- (f) Constellation Orion can be seen only with a telescope. ( )

**Answer : (a)**

False

Stars are not a member of the solar system. The sun and the celestial bodies revolving around it form the solar system.

(b) True

Mercury is the smallest planet of the solar system.

(c) False

Neptune is the farthest planet in the solar system.

(d) True

INSAT is an artificial satellite.

(e) False

There are eight planets in the solar system.

They are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

(f) False

Constellation Orion can be seen during winters around late evenings. It is one of the most magnificent constellations in the sky, visible to the naked eyes.

**Q6 :**

Match items in column A with one or more items in column B.

**Answer :**

A		B	
(i)	Inner planets	(g), (e)	Mars, Earth
(ii)	Outer planets	(a)	Saturn
(iii)	Constellation	(c), (f)	Great Bear, Orion
(iv)	Satellite of the Earth	(d)	Moon

A		B	
(i)	Inner planets	(a)	Saturn
(ii)	Outer planets	(b)	Pole star
(iii)	Constellation	(c)	Great Bear
(iv)	Satellite of the Earth	(d)	Moon
		(e)	Earth
		(f)	Orion
		(g)	Mars

**Q7 :**

In which part of the sky can you find Venus if it is visible as an evening star?

**Answer :**

Venus appears in the western sky after sunset and is called the evening star.

**Q8 :**

Name the largest planet of the solar system.

**Answer :**

The largest planet of the solar system is Jupiter.

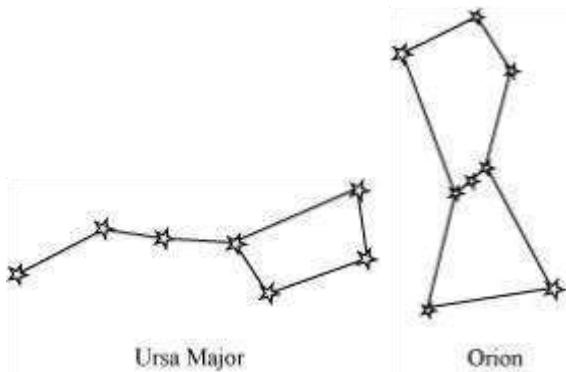
**Q9 :**

**What is a constellation? Name any two constellations.**

**Answer :**

A constellation is a group of stars that form a recognisable pattern in the sky.

The two well known constellations are Ursa Major and Orion.



**Q10 :**

**Draw sketches to show the relative position of prominent stars in (a) Ursa Major and (b) Orion**

**Answer :**

(a) Ursa Major appears like a big dipper. There are three bright stars in the handle and four stars in the bowl of the dipper (as shown in the given figure).



Ursa Major

(b) Orion appears like a hunter. Three bright stars appear in the belt, while five bright stars are arranged in the form of a quadrilateral (as shown in the given figure).



Orion

**Q11 :**

**Name two objects other than planets which are members of the solar system.**

**Answer :**

(i) Asteroids

A collection of a large number of small objects, gases and dust are revolving around the sun. They occupy a large gap between the orbits of Mars and Jupiter. However, these are not planets. These celestial objects are known as asteroids.

(ii) Meteors

Meteors are small celestial objects that are seen as bright streaks of light in the sky. They burn out on entering the Earth's atmosphere because of the heat produced by friction. This results in bright streaks in the sky. They are not planets.

**Q12 :**

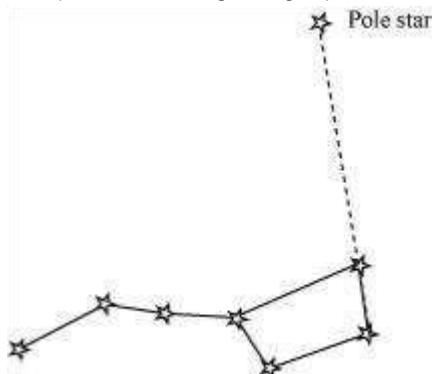
**Explain how you can locate the Pole Star with the help of Ursa Major.**

**Answer :**

In order to locate the Pole star in the sky, first of all Ursa Major or Big Dipper constellation must be located. The bowl of the Big Dipper consists of four bright stars (as shown in the given figure).



Consider two stars at the end of this bowl. Now, draw an imaginary straight line towards the Northern direction connecting these two stars (as shown in the given figure).



This imaginary line meets a star called the Pole Star. The length of the imaginary line from the bowl is about five times the distance between the two stars of the bowl.

**Q13 :**

**Do all the stars in the sky move? Explain.**

**Answer :**

No. The Earth rotates from West to East on its axis. Hence, all stars in the sky (except the Pole star) appear to move from East to West. With reference to the Earth, the Pole star does not appear to move in the sky because it is located above the axis of rotation of the Earth in the north direction. It appears to remain stationary at a point in the sky.

**Q14 :**

**Why is the distance between stars expressed in light years? What do you understand by the statement that a star is eight light years away from the Earth?**

**Answer :**

The distance of the stars from the Earth and the distance between the stars are very large. It is inconvenient to express these distances in kilometer (km). Thus, these large distances are expressed in light years. One light year is the distance travelled by light in one year. One light year is equal to  $9.46 \times 10^{12}$  km.

A star is located eight light years away from the Earth. This means that the distance between the star and the Earth is equivalent to the distance travelled by light in eight years, i.e., a star is located  $8 \times (9.46 \times 10^{12}) = 7.6 \times 10^{13}$  km away from the Earth.

**Q15 :**

**The radius of Jupiter is 11 times the radius of the Earth. Calculate the ratio of the volumes of Jupiter and the Earth. How many Earths can Jupiter accommodate?**

**Answer :**

Earth and Jupiter can be considered as two spheres with radii  $R$  and  $R'$  respectively. Given that the radius of Jupiter is 11 times the radius of the Earth. Thus,  $R' = 11R$

$$= \frac{4}{3}\pi r^3$$

Volume of a sphere of radius  $r$  is given as

$$= \frac{4}{3}\pi R^3$$

Volume of the Earth

$$= \frac{4}{3}\pi(R')^3 = \frac{4}{3}\pi(11R)^3 = 1331\left(\frac{4}{3}\pi R^3\right)$$

And, volume of Jupiter

The ratio of the volumes of Jupiter and Earth

$$\begin{aligned} &= \frac{\text{Volume of Jupiter}}{\text{Volume of Earth}} \\ &= \frac{1331\left(\frac{4}{3}\pi R^3\right)}{\frac{4}{3}\pi R^3} = 1331 \end{aligned}$$

Hence, this ratio suggests that Jupiter can accommodate 1331 number of Earths within it.

**Q16 :**

**Boojho made the following sketch (Fig. 17.29) of the solar system. Is the sketch correct? If not, correct it.**

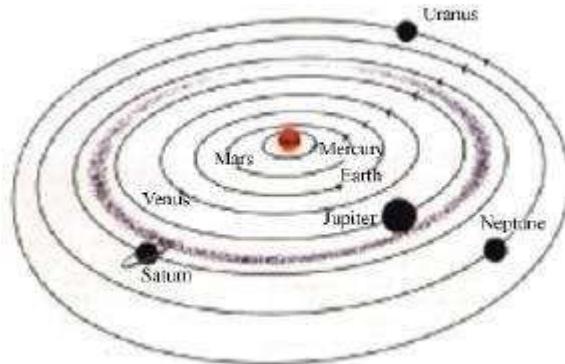
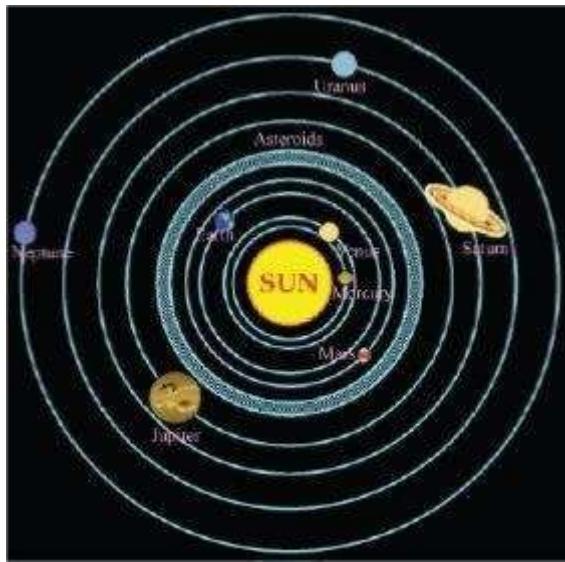


Fig. 17.29

**Answer :**

Planets of the solar system in sequence of their distances from the sun are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. Therefore, Boojho's sketch of the solar system is not correct because he has interchanged the positions of Mars and Venus and also the positions of Uranus and Neptune. Also, he has shown the Asteroid belt in the gap between the orbits of Jupiter and Saturn. This is not correct. The asteroid belt is located between the orbits of Mars and Jupiter. The correct sketch of the solar system is shown in the given figure.



# NCERT Solutions for Class 8 Science Chapter 18

## Pollution of Air and Water

**Exercise :** Solutions of Questions on Page Number : 252

**Q1 :**

**What are the different ways in which water gets contaminated?**

**Answer :**

Water gets contaminated by the addition of:

- (i) **Agricultural chemicals:** Farmers use excessive amounts of pesticides and fertilizers to increase crop production. These chemicals get carried away to the water bodies due to rains and floods which lead to water pollution.
- (ii) **Industrial wastes:** Industries release harmful chemical wastes into water sources, thereby polluting them.
- (iii) **Sewage wastes:** Waste materials from kitchens, toilets, and laundry sources are also responsible for contaminating water.

**Q2 :**

**At an individual level, how can you help reduce air pollution?**

**Answer :**

An individual can reduce air pollution by:

- (i) Avoiding the use of cars as much as possible and by using public transport whenever possible.
- (ii) By not using vehicles for short distances.
- (iii) By using clean fuels such as LPG and CNG instead of diesel and petrol.
- (iv) Always disposing the garbage properly and not burning it.
- (v) Controlling the emissions from vehicles and household chimneys.

**Q3 :**

**Clear, transparent water is always fit for drinking. Comment.**

**Answer :**

No. Clear and transparent water is not always fit for drinking. Water might appear clean, but it may contain some disease causing micro-organisms and other dissolved impurities. Hence, it is advised to purify water before drinking. Purification can be done by water purifying systems or by boiling the water.

**Q4 :**

**You are a member of the municipal body of your town.**

**Make a list of measures that would help your town to ensure the supply of clean water to all its residents.**

**Answer :**

To ensure the supply of clean water to all residents the following steps must be taken:

- (i) The main water source must be built in clean surroundings and should be maintained properly.
- (ii) Chemical methods such as chlorination must be used for purifying water.
- (iii) The area around water pipes must also be clean.

**Q5 :**

**Explain the differences between pure air and polluted air.**

**Answer :**

Pure air contains around 78% nitrogen, 21% oxygen, and 0.03% carbon dioxide. Other gases such as argon, methane, ozone, and water vapours are also present in small quantities. When this composition of air is altered by the addition of harmful substances or gases such as nitrogen dioxide, sulphur dioxide, carbon monoxide, and particulate matter, then the air is said to be polluted.

**Q6 :**

**Explain circumstances leading to acid rain. How does acid rain affect us?**

**Answer :**

Burning of fossil fuels such as coal and diesel releases a variety of pollutants such as sulphur dioxide and nitrogen dioxide into the atmosphere. These pollutants react with water vapours present in the atmosphere to form sulphuric acid and nitric acid respectively. These acids come down with the rain, thereby resulting in acid rain.

**Effects of acid rain:**

- (i) Acid rains damage crops.
- (ii) Acid rains corrode buildings and structures especially those made of marble such as Taj Mahal.

**Q7 :**

**Which of the following is not a greenhouse gas?**

- (a) Carbon dioxide
- (b) Sulphur dioxide
- (c) Methane
- (d) Nitrogen

**Answer :**

(d) Nitrogen

**Q8 :**

**Describe the 'Greenhouse Effect' in your own words.**

**Answer :**

Greenhouse effect may lead to global warming, i.e., an overall increase in the average temperature of the Earth. Greenhouse effect is caused by greenhouse gases. Examples of greenhouse gases include carbon dioxide, methane, and water vapour. When solar radiations reach the Earth, some of these radiations are absorbed by earth and then released back to the atmosphere. Greenhouse gases present in the atmosphere trap these radiations and do not allow heat to leave. This helps in keeping our planet warm and thus, helps in human survival. However, an indiscriminate increase in the amount of greenhouse gases can lead to excessive increase in the Earth's temperature leading to global warming.

**Q9 :**

**Prepare a brief speech on global warming. You have to deliver the speech in your class.**

**Answer :**

Global warming is an increase in the average temperature of the Earth's surface. It occurs as a result of an increased concentration of greenhouse gases in the atmosphere. The greenhouse gases include carbon dioxide, methane, and water vapour. These gases trap solar radiations released back by the Earth. This helps in keeping our planet warm and thus, helps in human survival. However, an increase in the amount of greenhouse gases can lead to an increase in the Earth's temperature leading to global warming.

**Q10 :**

**Describe the threat to the beauty of the Taj Mahal.**

**Answer :**

Acid rain is a major threat to the beauty of the Taj Mahal. When acid rains fall on the monument (that is completely made of marble), they react with marble to form a powder-like substance that is then washed away by the rain. This phenomenon is known as marble cancer. Also, the soot particles emitted from the Mathura oil refinery located near Agra is leading to the yellowing of the marble.

**Q11 :**

**Why does the increased level of nutrients in the water affect the survival of aquatic organisms?**

**Answer :**

An increase in the level of nutrients in a water body leads to an excessive increase in the population of algae in the water body. When these algae die, they serve as food for decomposers. A lot of oxygen is utilised in this process, consequently leading to a decrease in the level of oxygen dissolved in the water body. This in turn causes fishes and other aquatic organisms to die.