

# Science Booster 4

## 1

## Preparation of Food in Plants

### CHECK POINT 1

1. (c) 2. (a) 3. (d) 4. (b)

### CHECK POINT 2

1. Beans 2. Lettuce 3. Cactus 4. Mushroom

### PRACTICE TIME

A. 1. (T) 2. (T) 3. (T) 4. (F) 5. (F)

B. 1. (b) 2. (a) 3. (a) 4. (c)

C. 1. leaves 2. glucose 3. food 4. water; minerals

D. 1. Carbon dioxide + Water  $\xrightarrow[\text{Chlorophyll}]{\text{Sunlight}}$  Glucose + Oxygen + water vapour

2. The food manufactured by plants is used for the growth of plant, building new cells and for repairing the worn out cells. Extra food stored in fruits, leaves, stems and roots is eaten by animals.

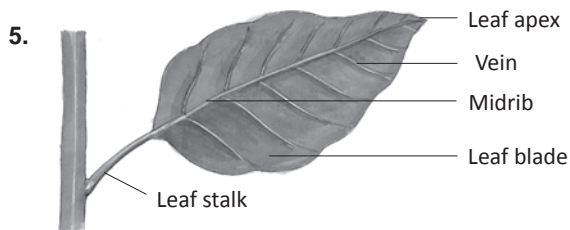
3. Pitcher plant and mushroom are unusual plants.

#### ● Pitcher plant:

1. It is a green plant in which leaves are modified into pitcher-like structure.
2. It digests insects to fulfil its nitrogen requirement.

#### ● Mushroom:

1. It is a nongreen plant and it cannot make its own food.
  2. It grows on decaying matter and obtains food from it.
4. Plants depend on animals for carbon dioxide and minerals while animals depend on plants for their food and oxygen.



- E. 1.** (a) Root hair; because other three are parts of a leaf and root hair is a part of root.
- (b) Veins; because veins are the visible parts of a leaf, whereas others are the inner parts of a leaf.
- (c) Carbon dioxide; carbon dioxide is used in the process of photosynthesis, whereas others are products of photosynthesis.
- 2.** (a) Plants produce food in the presence of sunlight which helps them to grow.
- (b) Potato contains starch which turns iodine blue-black in colour.
- (c) Most of the plant leaves are green in colour because they contain green pigment named chlorophyll in them.
- F.** The plants that shed their leaves every year, store some food in their stems or roots. Also, they get new leaves within a short period of time.
- G.**
- If xylem stops working, the plant will wilt in the want for water.
  - If phloem stops working, the plant will die in the absence of food.

# 2

## Adaptations in Plants

### CHECK POINT 1

1. Habitat 2. Terrestrial plants 3. Cones 4. Mangroves 5. Short and spiny leaves

### CHECK POINT 2

1. Lotus 2. Waterlily 3. Water hyacinth 4. Yam

### PRACTICE TIME

A. 1. (F) 2. (F) 3. (T) 4. (T) 5. (F)

B. 1. (a) 2. (a) 3. (a)

C. 1. mangrove 2. conifers 3. leaves 4. submerged 5. aquatic

- D. 1. Hilly plants have shorter stems, needle-like leaves and bear cones instead of flowers.  
2. Plants growing in plains have many branches with broad and big leaves. They shed their leaves in winter and grow new leaves in summer.  
3. Desert plants store water in their stems, have short and spiny leaves, a long root system and waxy coating on leaves and stems.  
4. Mangrove plants grow in waterlogged soil which does not have air to breathe in. So they need breathing roots to get air for respiration.  
5. The submerged plants carry out the exchange of gases through the surface of their plant body.  
6.



Cactus

- E. 1. The spines on pineapple fruit protect it from animals.  
2. Some plants like yam produce a poisonous sap to protect themselves from their enemies.

**3.** The leaves of aquatic plants have a waxy coating on them to prevent themselves from rotting in water.

**F. Down: 1. SPONGY 2. CONE 4. ADAPTATION**

**Across: 3. MANGROVE 5. STOMATA 6. THORNS 7. CONIFERS**

**G.** Mangoes grow in warm places while plums and cherries need cool climate to grow well. That is why mangoes are not grown in hilly areas.

# 3

## Adaptations in Animals

### CHECK POINT 1

1. Arboreal
2. Terrestrial
3. Aquatic
4. Aerial
5. Terrestrial
6. Aerial
7. Aquatic
8. Amphibious

### CHECK POINT 2

1. Carnivorous animals
2. Parasites
3. Camouflaging animals
4. Wading animals

### PRACTICE TIME

A. 1. (F) 2. (F) 3. (T) 4. (F)

B. 1. (a) 2. (c) 3. (d) 4. (c)

C. 1. snake 2. fur 3. tail 4. webbed

D. 1. Amphibians breathe through lungs when on land and through skin when in water.

2. Some animals hide themselves in warm places to avoid extreme cold and show very little activity. This is called hibernation. Frogs and lizards are hibernating animals.

3. In some animals, their skin colour or pattern is same to their surroundings so that they are not spotted easily. This phenomenon is called camouflage.

For example, the colour of grasshopper is green as that of grass, stick insect looks like a twig and polar bear is all white as snow.

4. Porcupines have spines on their body to defend themselves from their enemies.

5. Chameleon changes its body colour according to its surroundings. This protects it from its enemies.

E. 1. Tigers have strong legs to run fast to catch their prey.

2. Parasites obtain liquid food from the body of other animals. So, they do not have teeth.

3. Broad and padded feet of camels help them to walk on warm and loose sand without being heated and slipped.

F. 1. DUCK 2. SQUIRREL 3. CAMEL 4. SNAKE

G. The black and white stripes on the bodies of zebras help them hide among the high raised leaves of grass. This helps them protect from their enemies.

# 4

## Reproduction in Animals

### CHECK POINT

1. (T) 2. (T) 3. (F) 4. (F) 5. (F) 6. (T)

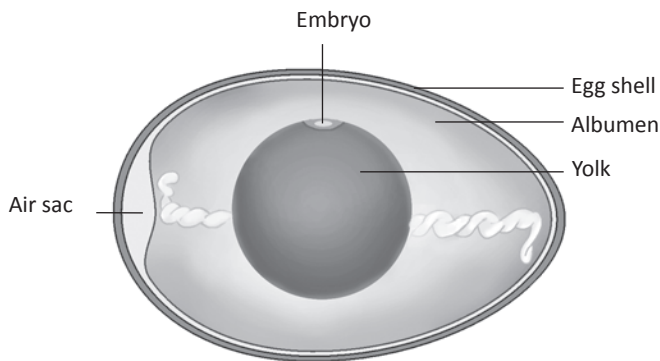
### PRACTICE TIME

A. 1. Reproduction 2. Reptiles 3. Yolk 4. Spawn

B. 1. (a) 2. (b) 3. (a) 4. (c)

C. 1. tadpole 2. moulting 3. pupa 4. cocoon

D. 1.



Structure of a bird's egg

2. The yolk contains embryo and food for it.

3. Special features of mammals are:

- They give birth to young ones.
- They produce milk to feed their babies.
- They take good care of their babies.
- They have hair on their bodies.

4. Birds, fishes, reptiles, amphibians and insects lay eggs.

5. A frog produces a spawn of eggs on safe places in water. The eggs hatch into tadpoles. The tadpoles grow into young frogs having tails. The young frogs grow into adult frogs and their tail disappears. Hence adult frogs are formed.

E. 1. (a) Frog; Frog is an amphibian, whereas others are insects.

(b) Crow; Here, crow is a bird, whereas others are reptiles.

(c) Tadpole; Here, tadpole is a larva of frog, whereas others are mammals.

(d) Dolphin; Here, dolphin gives birth to young ones, whereas others lay eggs.

2. (a) The young ones of the mammals have larger number of survivals because the parent mammals feed, clean and keep them safe until they have learnt to look after themselves.

(b) A tadpole looks like a fish because it is a larval stage which lives in water.

**F.** COCOON, EGG, EMBRYO, TADPOLE, LARVA, ADULT, PUPA, NYMPH, YOLK, MOULTING

**G.** The four stages in the life cycle of mosquito are egg, larva, pupa and adult.

When a mosquito sucks blood of a patient, the germs present in the blood of patient get into the body of mosquito. When this mosquito bites a healthy person, these germs are transferred into the healthy body and make it sick.

# 5

## The World of Microbes

### CHECK POINT 1

1. Yes 2. No 3. Yes

### CHECK POINT 2

1. germs 2. meals 3. microbes

### PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (T)

B. 1. (d) 2. (a) 3. (c) 4. (c)

C. 1. Viruses

2. Protozoa

3. Fungi

4. warm, damp

D. 1. Microbes are very tiny organisms. They can be seen only with the help of microscope.

Their four types are bacteria, viruses, protozoa and fungi.

2. Fungi are not able to make their own food because they lack chlorophyll.

3. Removal of water from any substance is called dehydration.

4. Milk is boiled before use to kill the harmful microbes present in them.

5. Pickles and jams stay fresh for a long time because too much of salt or sugar does not allow the microbes to grow in them.

E. 1. Cholera; It is caused by bacteria, whereas others are caused by viruses.

2. Chickenpox; It is caused by virus, whereas others are caused by bacteria.

3. Washing; All three except washing are the ways to protect food from microbes for a long time.

4. Mushroom; It is a member of fungi group, but other three are the group of microbes.

F. This is because such food is less nutritious.

G. 1. Fungi 2. Fungi 3. Protozoa 4. Bacteria 5. Viruses

H. If we are to have food outside the home, we should eat at some hygienic place only.



# 6

## Healthy Eating

### CHECK POINT 1

1. (F) 2. (F) 3. (F) 4. (T)

### CHECK POINT 2

1. Balanced diet 2. Overcooking 3. Steaming 4. Jams and Jellies

### PRACTICE TIME

A. 1. (F) 2. (F) 3. (T) 4. (T) 5. (F)

B. 1. (b) 2. (c) 3. (d) 4. (b)

C. 1. nutrients

2. fat

3. protein

4. preservation

5. Overcooking

D. 1. A balanced diet contains the right amount of all the nutrients. The main components of a balanced diet are grains, vegetables, fruits, milk, butter, meat, etc.

2. Vitamins and minerals are important to us because they protect us from various diseases.

3. Different ways for making the food edible are boiling, frying, steaming, roasting and baking.

4. Overcooking of food should be avoided to save the vitamins and minerals from destroying.

5. The process of protecting food from getting spoiled and keeping it safe to eat, for longer periods of time is called food preservation.

Different ways of preserving food are baking, salting, adding large amount of sugar, drying in the sun, etc.

6.



Milk  
(Milk group)



Mango  
(Fruit group)



Egg  
(Meat group)



Bread  
(Grain group)



Tomato  
(Vegetable group)

**E.** 1. (d) 2. (a) 3. (e) 4. (b) 5. (c)

**F. 1.** (a) Cashewnut; It is a rich source of fats, whereas others are rich sources of roughage.

(b) Apple; It is a rich source of carbohydrates and vitamins, whereas others are fats.

(c) Potato; It is a rich source of carbohydrate, whereas others are rich sources of proteins.

(d) Spinach; It is a rich source of minerals, whereas others are rich sources of carbohydrates.

2. (a) Lemons and citrus fruits are rich source of vitamin C which is not stored in the body. So, we should include lemons and citrus fruits in our diet.

(b) Proteins help in the growth of body and repair of damaged cells and tissues. So, our diet must contain a regular portion of proteins.

(c) Raw food is hard, tasteless and indigestible. Cooking makes it soft, tasty and digestible. Therefore, raw food is not always preferred.

(d) Carbohydrates provide instant energy and proteins help in building body muscles. So, athletes need more carbohydrates and proteins than a common man.

**G.** Sameer is deficient of iron. He should eat green leafy vegetables like spinach, fenugreek as well as beans, lentils, chick peas, soyabeans and eggs.

**H.** Vitamins prevent many infections in the body. So, they play an important role in maintaining good health.

**I.** Do yourself.

## CHECK POINT 1

1. milk teeth 2. Pulp 3. Canines 4. Enamel

## CHECK POINT 2

1. bad breath 2. starch 3. small intestine 4. large intestine

## PRACTICE TIME

A. 1. (F) 2. (T) 3. (T) 4. (T)

B. 1. (b) 2. (c) 3. (a) 4. (b)

C. 1. dentine 2. enamel 3. gums 4. toothache

D. 1. The first set of teeth which grow between the age of six and nine months of a baby is called milk teeth. They are 20 in number.

The second new set of teeth that grow after falling of milk teeth are called permanent teeth. They grow between the six and twelve years of age. They are 32 in number.

2. The role of four types of teeth in digestion is as follows:

- Incisors bite the food and shovel it inwards.
- Canines tear the food.
- Premolars crush the food.
- Molars grind the food.

3. We should take care of our teeth in following ways:

- We should eat food containing lots of calcium and vitamin C.
- We should brush our teeth twice a day.
- We should rinse our mouth after every meal.
- We should avoid too much of sweets and aerated drinks.
- We should have regular check up by the dentist.

4. The path of the food in digestive system is:

Mouth → Foodpipe → Stomach → Small intestine → Large intestine → Anus

5.



(a) Incisor



(b) Canine



(c) Molar



(d) Premolar

- E.**
1. If teeth would be unhealthy, the food cannot be chewed well and broken down properly. As a result, the food cannot be digested completely and it leads to poor digestion.
  2. It is because during chewing the food, saliva is mixed in it. The saliva breaks down the starch, present in food, into sugar and digests it properly.
- F.**
1. The safety pin pricked Keshav's gum.
  2. He used a pointed object to remove the fibre from between the teeth.
  3. He should have removed it by rinsing the mouth or by brushing or by using a toothpick.
- G.** Buffaloes have very sharp front teeth in the lower jaw. They have tough surface of upper jaw in place of teeth and cut the grass with lower teeth. They chew their food with the help of strong molars.
- H.** If there were no small intestine in our body, we would not be able to digest our food properly.

# 8

## Staying Safe

### CHECK POINT

1. (c) 2. (d) 3. (a) 4. (b)

### PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (F) 5. (T)

B. 1. (b) 2. (b) 3. (a)

C. 1. Zebra 2. labelled 3. blow 4. open

D. 1. We can be safe while playing by

- playing on pebble and stone-free ground.
- Not pushing other children and not throwing things on them.
- Not playing with sharp objects.

2. To avoid road accident while walking on the road, we should walk on the footpath. If there is no footpath, we should walk on the right side of the road.

3. ● Never go alone for swimming.

- Never go deep into water.
- Never push anybody into the pool just for fun.
- Swim only in the presence of lifeguard.

4. The first help given to an injured person before reaching the doctor is called first aid. In case of bruise, a simple cold-pack should be applied over it so as to slow down the bleeding under the skin.

5. Accidents due to electrical equipments can be prevented by not touching them with wet hands and barefoot.

E. 1. Cold pack slows down the bleeding under the skin. So, it is suggested to apply a cold pack immediately after a bruise.

2. In case of nose-bleed, the patient should lean his head forward so that he does not swallow blood.

3. A cut or wound should not be left open because dust or germs can enter it and cause infection.

F. **Down:** 1. TOYS 3. ACCIDENT

**Across:** 2. FOOTPATH 4. KNIFE 5. FIREWORK 6. SWIMMING

G. Do it yourself.

# 9

## Clothes for Us

### CHECK POINT 1

1. Early man 2. Cotton clothes 3. Gumboots 4. Man-made fibre 5. Animals (sheep)

### CHECK POINT 2

1. FABRICS 2. SILK 3. DRYCLEAN 4. MOTHBALLS

### PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (F)

B. 1. (a) 2. (d) 3. (a)

C. 1. synthetic 2. natural 3. dust 4. neem

D. 1. We need clothes to cover our body. They protect us from heat, cold, rain, dust and insect bites.

2. Socks and shoes protect our feet from dust, heat, cold, insects, worms and germs.

3. The clothes of a patient should always be disinfected with some antiseptic solution.

4. Woollen and silk clothes should be stored with moth balls or dried neem leaves between their folds.

5. Cotton clothes are preferred during summers because they absorb the sweat easily, reflect the heat and keep the body cool.

E. 1. Clothes made of synthetic fibres do not absorb water. So, they dry very quickly.

2. White or light-coloured clothes reflect the heat and keep the body cool.

F. Mrs. Sharma should carry woollen clothes because the weather would be cold in the USA.

G. John and his family should carry woollen clothes.

H. They will need light cotton clothes, umbrella, raincoat, etc.

I. School bags and travelling bags are made from synthetic fibres because they are light and strong.

J. The clothes will become wet as jute bag is not waterproof.

**CHECK POINT 1**

1. Breeze 2. Storm 3. Thunderstorm 4. Sea breeze

**CHECK POINT 2**

1. Water table 2. Water cycle 3. Clouds 4. Water pollution 5. Chlorine

**PRACTICE TIME**

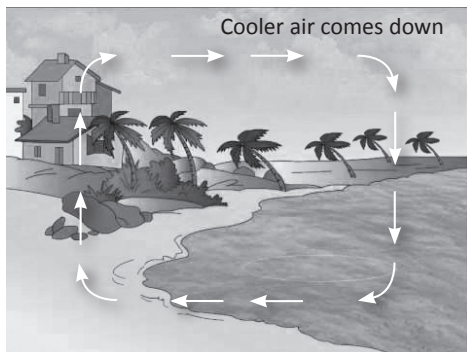
A. 1. (T) 2. (F) 3. (T) 4. (T)

B. 1. (d) 2. (b) 3. (a) 4. (d) 5. (a) 6. (c)

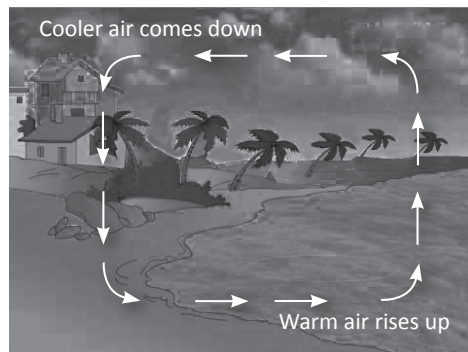
C. 1. evaporation 2. condenses 3. water table 4. cholera; jaundice

D. 1. **Sea breeze:** A sea breeze is a wind which blows towards land from sea. It blows during daytime.

**Land breeze:** A land breeze is a wind which blows towards sea from land. It blows during night.



Sea breeze



Land breeze

2. The change of the liquid state of water into the gaseous state using heat is called evaporation.

**Factors that affect the rate of evaporation:** Temperature, surface area, speed of wind and humidity.

3. **Rain:** When the drops of water in clouds become large and heavy, they fall down as rain.

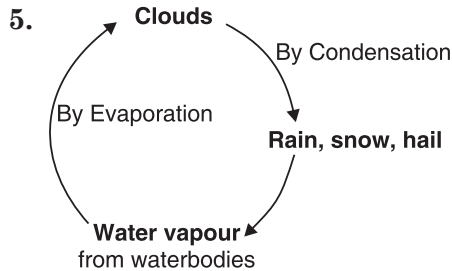
**Snow:** In colder regions, water vapour in clouds freezes into ice crystals and

fall down as snow.

**Hail:** When raindrops pass through very cold regions in the earth's atmosphere, they freeze in to small round ball and fall down as hail.

4. **Water pollution:** Contamination of water with harmful substances is called water pollution.

The polluted water can be purified for drinking by filtration, boiling and chlorination.



- E. 1. Early morning flights are delayed during winter because the visibility is reduced due to the presence of fog.  
2. In rainy season, the rainwater goes into the earth and gets collected. So, the water table rises during the rainy season.
- F. **Down:** 1. HUMIDITY 2. DEW 4. RAINBOW  
**Across:** 3. TEMPERATURE 5. CLOUDS 6. FOG
- G. We use so many things which create harmful substances and waste. We throw this waste in rivers and pollute them.



**CHECK POINT**

1. Weather 2. Climate 3. Temperature 4. Cloud

**PRACTICE TIME**

A. 1. (T) 2. (T) 3. (T) 4. (F)

B. 1. (c) 2. (a) 3. (d)

C. 1. weather 2. slanting 3. degree 4. faster; water 5. lighter

D. 1. Noons are hotter than mornings and evenings because at this time sunrays fall straight on the surface of the earth, whereas in morning and evening, sunrays fall slanting on the earth and they spread the heat over a large area.

2. Weather is the state of atmosphere at a particular place and time, whereas climate is the average weather condition of a place over a long period of time.

3. Villages are often cooler than towns and cities because they have less number of buildings than towns and cities.

4. Due to the sun, the weather of morning and evening is cooler than the noon. Weather is also cool on a cloudy day. It is hot on sunny days.

E. 1. Hot air is lighter than cold air. So, hot air balloons rise up in the air.

2. Weather forecasting helps us to get prepared beforehand to face the change in weather.

F. The hot air is lighter than air. So, it rises up making the entire room warm.

G. In olden days, weather forecasting was done by looking at the colour and shapes of clouds in the sky and observing the speed, temperature and the direction of wind.

Today, weather forecasting is done with the help of electronic instruments.

CHECK POINT 1

1. Yes 2. No 3. Yes 4. Yes

CHECK POINT 2

- Sugar in water and salt in water
- Milk in water and Juice in water
- Carbon dioxide in soda and oxygen in water

PRACTICE TIME

A. 1. (F) 2. (F) 3. (T) 4. (F)

B. 1. (d) 2. (a) 3. (b) 4. (b)

C. 1. space; weight 2. atoms 3. molecule 4. solid, liquid; gas

D. 1. Anything that takes up space and has weight is called matter.

2. **Miscible liquids:** The liquids which mix well with each other are called miscible liquids. For example, milk and water are miscible liquids.

**Immiscible liquids:** The liquids which do not mix well with each other are called immiscible liquids. For example, oil and water are immiscible liquids.

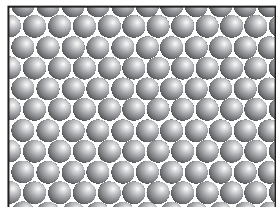
3. An agarbatti can be smelt even if it is lighted in the other corner of a room because its molecules easily spread through the space available to them.

4. Evaporation is the changing of water into water vapour on heating. Condensation is a phenomenon opposite to evaporation.

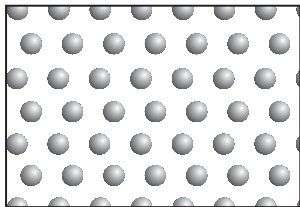
5. When a solid dissolves in a liquid, it forms a solution. The solid which dissolves is called solute and the liquid into which the solid dissolves is called solvent. Thus, solution is a mixture of solute and solvent.

Solute + Solvent → Solution

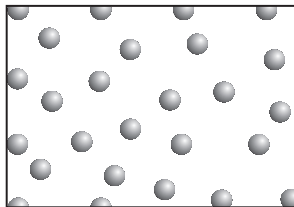
6.



Molecules in solid state are tightly packed



Molecules in liquid state are loosely packed



Molecules in gaseous state are very loosely packed

- E.** The club soda contains carbon dioxide gas which on shaking gets released from soda and inflates the balloon.
- F.** 1. Water; Here, water is liquid, whereas others are solids.  
2. Ice; Here, ice is solid, whereas other three are gases.  
3. Butter; Here, butter is solid, whereas other three are liquids.  
4. Milk; Here, milk is liquid, whereas other three are solids.
- G.** 1. matter 2. atom 3. soda
- H.** Water molecules have very tiny spaces among them. The particles of sugar fill these spaces when sugar is dissolved in water. So, the volume of water does not increase.

## CHECK POINT 1

1. Muscular force 2. Gravitational force 3. Frictional force

## CHECK POINT 2

1. Yes 2. No 3. Yes 4. No

## PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (F) 5. (T)

B. 1. (d) 2. (b) 3. (c) 4. (c)

C. 1. moving

2. Energy

3. electrical

4. electricity

5. machine

D. 1. A force is a push or pull required to do work.

A force can:

- make an object move.
- stop a moving object.
- change the direction of a moving object.
- change the shape of an object.

2. We need energy to do different types of work. Different forms of energy are solar energy, wind energy, hydroenergy, etc.

3. The energy obtained from the sun is called solar energy, whereas energy of flowing water is called hydroenergy.

4. Machines make our work easier and faster by changing the direction of the force applied.

5. Solar cookers are used for cooking food and solar heaters for getting hot water by using energy of the sun.

E. 1. Change of climate; because it is not the result of force, whereas other three are the result of a force.

2. Friction; It is a kind of force, whereas other three are the forms of energy.

**3.** Metre rod; It is used to measure the length of cloth, whereas other three are simple machines.

**F.** 1. windmill 2. hydroenergy 3. gravity 4. inclined plane

**G.** Do yourself.

**H.** Some examples of energy conversion from everyday life are burning of fuel (chemical energy into heat and light energy); lighting of bulb (electrical energy into light and heat energy), running of electric fan and motor (electrical energy into mechanical energy), etc.

**I.** Netherlands.

CHECK POINT 1

1. Star 2. Orbit 3. Planet 4. Pluto

CHECK POINT 2

1. axis 2. hemisphere 3. outer 4. revolution

PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (F) 5. (T)

B. 1. (a) 2. (a) 3. (c) 4. (d) 5. (a)

C. 1. galaxy 2. star 3. Saturn 4. equator 5. crust

D. 1. The eight planets of our solar system are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

2. The earth is a special planet because it is the only planet in the solar system that has life on it.

3. Stars are huge balls of hot gases which give out heat and light.

Planets are heavenly bodies that revolve around the sun or any other star. They do not have heat and light of their own but reflect the light of their closest star.

4. The earth is made of three different layers. These are

- The outer most **crust** on which animals and plants live.
- The middle one **mantle** which is made up of molten rocks.
- The inner most **core** which is made up of iron, nickel and some other metals.

5. The tilted axis of the earth and its revolution around the sun cause seasons on the earth.

The four seasons are spring, summer, autumn and winter.

E. 1. Due to the tilted axis of earth, only one hemisphere gets straight sunrays and the other gets tilted sunrays. So, northern and southern hemispheres always have opposite seasons.

2. The stars are not seen during the daytime due to the glare of the sun.

F. The moon shines by throwing back light of the sun falling on it.

G. The seasons on the earth change due to its revolution around the sun. Thus, a season comes again when the earth reaches in the same position again during its revolution.