

NCERT Solutions Cell- Structure and Functions

- (a) True
(b) True
(c) False
(d) True
- Sketch of human nerve cell- refer to NCERT text book -
Function of nerve cell – (a) it helps in the transfer of messages from various body parts to brain and from brain to various body parts of the body.
(b) Nerve cells help in coordination of the functions of the organs of body.
- (a) Cytoplasm- it is a jelly like substance which is present between nucleus and the cell membrane. There are various other organelles present in the cytoplasm. It is made up of carbohydrates, proteins and water.
(b) Nucleus of a cell- Nucleus is a dense, spherical structure situated in the centre of a cell. Nuclear membrane separates the nucleus from cytoplasm. It contains genetic materials like RNA and DNA.
- Cytoplasm contains organelles.
- Diagrams of plant and animal cell- refer to NCERT textbook -
Differences:

Animal cell	Plant cell
(a) Chloroplast is not there	(a) Chloroplast is there
(b) Cell wall is absent	(b) Cell wall is present
(c) Centrosome is present	(c) It doesn't have centrosome
(d) Vacuoles are much smaller in size	(d) Vacuoles are large in size
- Eukaryotes have a well designed nucleus and organelles covered with membranes but prokaryotes do not have a well designed nuclear membrane.
- Chromosomes are present in the nucleus of the cell and they carry characteristics of parent cells to daughter cells.
- Numerous cell units combine to form tissues. These tissues combine to form organs which form a complete body. Hence cell is the structural unit of an organism that perform all basic functions of life.
- Photosynthesis is the main process in plants which takes places in the presence of chlorophyll which is found in chloroplasts. That's why chloroplast is found only in plant cells.

NCERT Solutions for Microorganisms: Friend and Foe

Q1. Fill in the blanks:

- Microorganisms can be seen with the help of a_____.
- Blue green algae fix _____ directly from, air to enhance fertility of soil.
- Alcohol is produced with the help of_____.
- Cholera is caused by_____.

Ans. (a) microscope (b) atmospheric nitrogen
(c) yeast (d) bacteria.

Q.2. Tick (✓) the correct answer:

- Yeast is used in the production of
 - sugar
 - alcohol
 - hydrochloric acid
 - oxygen.
- The following is an antibiotic
 - sodium bicarbonate
 - streptomycin
 - alcohol

yeast.

- (c) Carrier of malaria-causing protozoan is
 - (i) female Anopheles mosquito
 - (ii) cockroach
 - (iii) housefly

butterfly.

- (d) The most common carrier of communicable diseases is
 - (i) ant
 - (ii) housefly
 - (iii) dragonfly

spider,

- (e) (e) The bread or idli dough rises because of
 - (i) heat
 - (ii) grinding
 - (iii) growth of yeast cells

kneading.

- (f) The process of conversion of sugar into alcohol is called
 - (i) nitrogen fixation
 - (ii) moulding
 - (iii) fermentation

infection

Ans. (a) (ii) alcohol (b) (ii) Streptomycin
(c) (i) female Anopheles mosquito (d) (ii) housefly
(e) (iii) growth of yeast cells (f) (iii) fermentation.

Q.3. Match the organisms in Column A with their action in Column B.

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

Ans. Column A	Column B
(i) Bacteria	(e) Causing cholera
(ii) Rhizobium	(a) Fixing nitrogen
(iii) Lactobacillus	(b) Setting of curd
(iv) Yeast	(c) Baking of bread
(v) A protozoan	(d) Causes malaria
(vi) A virus	(f) Causing AIDS

Q.4. Can microorganisms be seen with the naked eyes? If not how can they be seen?

Ans. Microorganisms cannot be seen with naked eyes. They can be seen with the help of a microscope.

Q.5. What are the major groups of microorganisms?

Ans. There are following four major groups of microorganisms:

- (i) Bacteria

- (ii) Fungi
- (iii) Protozoa
- Algae.

In addition viruses are also considered as fifth group of microorganisms.

Q.6. Name the microorganisms which can fix atmospheric nitrogen in the soil.

Ans. Bacteria like Rhizobium and Azotobacter and blue green algae can fix atmospheric nitrogen in soil.

Q.7. Write 10 points on the usefulness of microorganisms in our lines:

Ans. Uses of microorganisms:

- (i) Microorganisms help in the preparation of curd, bread, cake etc.
- (ii) They are used to produce alcohol at large scale.
- (iii) Yeast is used to prepare vinegar.
- (iv) Microorganisms are used to make wines.
- (v) They act as cleaning agent and decompose the waste products into manure.
- (vi) They destroy the plant and animal dead bodies by decomposing them.
- (vii) They increase soil fertility by fixing nitrogen of atmosphere.
- (viii) They are used in making medicines like antibiotics and vaccines.
- (ix) They are used as preservatives for food items.
- (x) They help in various metabolic activities in our body.

Q.8. Write a short paragraph on the harms caused by microorganisms.

Ans. Microorganisms are also very harmful to us. They cause a number of diseases in human as well as in other animals. Common cold, Tuberculosis, Measles, Chicken Pox, Polio, Cholera, Typhoid, Hepatitis B, Malaria, are some common human diseases caused by microorganisms. Anthrax is a serious disease in animals caused by microbes. They also make food items unfit for use by food poisoning. They also spoil clothes and leather products.

NCERT Solution for Reaching the Age of Adolescence

QUESTIONS FROM TEXTBOOK

Q.1. What is the term used for secretions of endocrine glands responsible for changes taking place in the body?

Ans. Hormones.

Q.2. Define adolescence.

Ans. The period of life, when the body undergoes changes, leading to reproductive maturity is called adolescence.

Q.3. What is menstruation? Explain.

Ans. When the egg produced by ovary does not get fertilised, the released egg and the thickened lining of the uterus along with its blood vessels are shed off. This causes bleeding in women which is called menstruation.

Menstruation occurs once in about 28 to 30 days.

Q.4. List the changes in the body that take place at puberty.

Ans. The changes in the body of puberty are:

- (i) Sudden increase in height.
- (ii) The bones of arms and legs elongate and make a person tall.
- (iii) Growing of hair at different parts of body.
- (iv) The voice of a boy gets hoarsed.
- (v) Development of sex organs.
- (vi) Growth of moustaches and beards in the boys.
- (vii) The breast in girls develops and hips become wider whereas in boys shoulders generally broaden.

Q.5. Prepare a table having two columns depicting names of endocrine glands and hormones secreted by them.

Ans.

Table

Endocrine glands	Hormones
1. Pituitary gland	(i) Growth hormones
2. Ovaries	(ii) Estrogen
3. Testes	(iii) Testosterone
4. Thyroid	(iv) Thyroxine
5. Pancreas	(v) Insulin
6. Adrenal glands	(vi) Adrenalin

Q.6. What are sex hormones? Why are they named so? State their functions.

Ans. The hormones which help and control the formation of secondary sexual characters are called sex hormones. They are called sex hormones because they control the sexual activities and help us to distinguish boys from girls.

The sex hormones help to develop the secondary sexual characters. Such as, in boys they control formation of sperms by testes and growth of facial hair. In girls they help to develop breasts, milk secreting glands or mammary glands.

Q.7. Choose the correct option.

- (a) Adolescence 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) testes buds are well developed in teenagers.
- (b) Reproductive age in women starts when their:
- (i) menstruation starts.
 - (ii) breasts start developing.
 - (iii) body weight increasing.
 - (iv) height increases.
- (c) The right meal for adolescents consists of:
- (i) chips, noodles, cake.
 - (ii) chapati, dal, vegetable.
 - (iii) rice, noodles and burger.
 - (iv) vegetable cutlets, chips and lemon drink.

Ans. (a) (ii) proper diet is needed for the rapid growth taking place in their body.

- (b) (i) menstruation starts.
(c) (ii) chapati, dal, vegetable.

Q.8. Write notes on:

- (a) Adam's apple
- (b) Secondary Sexual characters
- (c) Sex determination in unborn baby.

Ans. (a) Adam's apple: The protruding part in the throat is called Adam's apple. It is the enlarged voice box or larynx. It makes the voice of boys coarse.

(b) Secondary sexual characters: The characters which help to distinguish the male from female are called secondary sexual characters. The characters like hair on chest under arms, development of breast, beard and moustaches are called secondary sexual characters.

(c) Sex determination in unborn baby: The sex of unborn baby is determined by the sex chromosomes. An unfertilized egg always has X chromosomes. Sperms are of two types. One contains X chromosomes and the other contains Y chromosomes. If sperm contributes a Y chromosome to the egg at fertilisation, the zygote would develop into male child. If a sperm containing X chromosome fertilises the egg, the zygote would develop into a female.

Q.9. Word game: Use the clues to work out the words.

Across

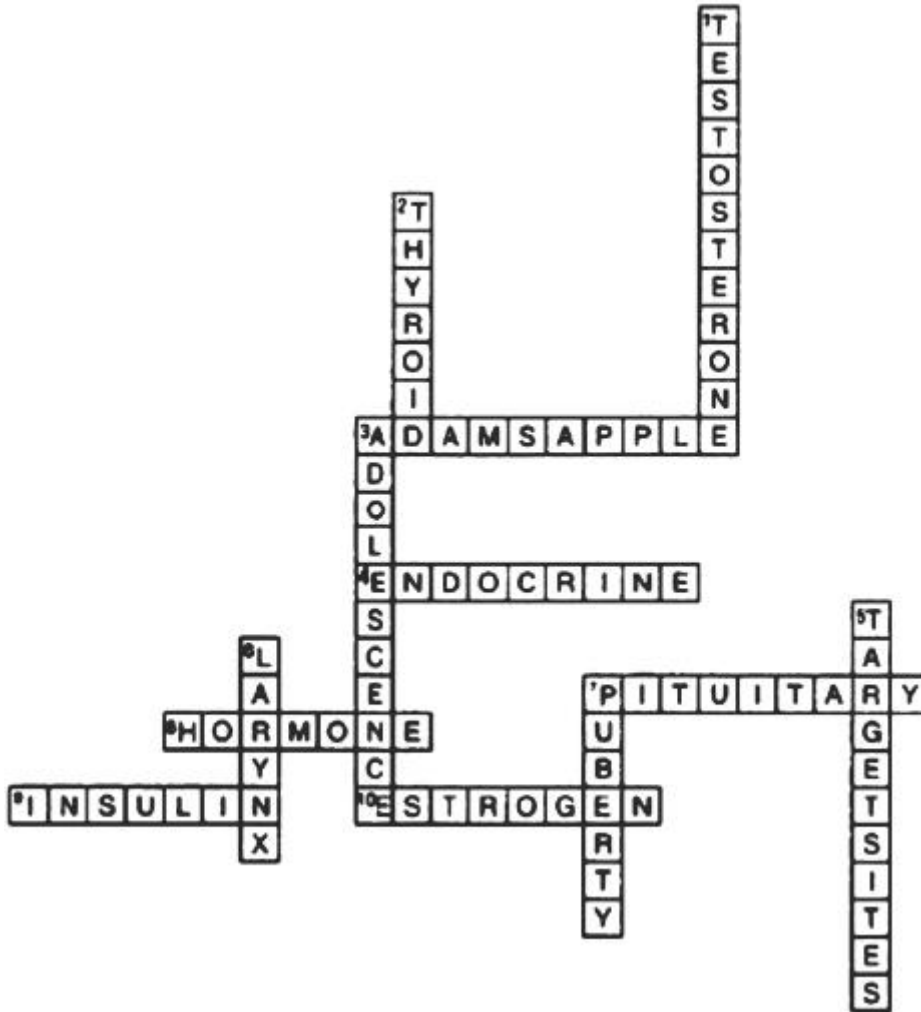
- 3. Protruding voice box in boys
- 4. Glands without ducts
- 7. Endocrine gland attached to brain
- 8. Secretion of endocrine glands

- 9. Pancreatic hormone
- 10. Female hormone

Down

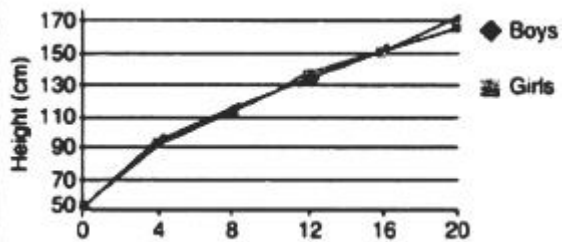
- 1. Male hormone
- 2. Secretes thyroxine
- 3. Another term for teenage
- 5. Hormone reaches here through blood stream
- 6. Voice box
- 7. Term for changes at adolescence.

Ans.

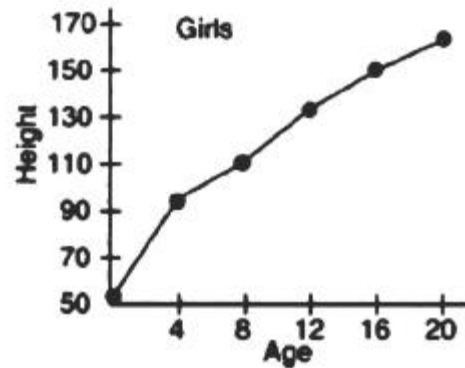
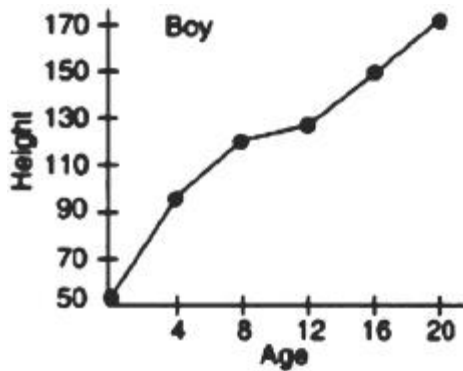


Q.10. The table below shows the data on likely heights of boys and girls as they grow in age. Draw graphs of height and age for both boys and girls on the same graph paper. What conclusions can be drawn from these graphs?

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



Ans. We conclude that initially, girls grow faster than boys but by about 18 years of age both reach about their maximum height. The rate of growth in height varies in different individuals.



They also reduce the crop production.

Q.9. What are antibiotics? What precautions must be taken while taking antibiotics?

Ans. The medicines which kill or stop the growth of microorganisms in our body are called antibiotics. These are very useful to us as they prevent us from the effects of microorganisms. Antibiotics are made from bacteria and fungi. The penicillin is the first antibiotics which is discovered by Alexander Fleming in 1929. These days a number of antibiotics are used to cure various human and animal diseases. Streptomycin, Tetracycline, Erythromycin etc. are some common antibiotics. Precautions: We should take antibiotics only by the advice of a qualified doctor. Antibiotics should only be taken when needed. Otherwise, they may be harmful and become less effective in future.

Reproduction in Animals

1. Reproduction is a very important process for living organisms. It facilitates the continuation of a species.

2. Sexual reproduction takes place in human beings. Male partner releases sperm inside female's body. Sperms and ovum fuse together in fallopian tube to form zygote. During this process the nucleus of sperm fuses with the nucleus of ovum to form a single nucleus. This entire process is called fertilization.

3. (a) in female body
(b) metamorphosis
(c) one

4. (a) false
(b) true
(c) true
(d) false
(e) true
(f) false
(g) false
(h) true
(i) true
(j) false

5.

Zygote

It contains single cell.

It is formed by the fusion of ovum and sperm.

Foetus

It contains many cells.

It is formed by repeated divisions of zygote.

6. Asexual reproduction is a mode of reproduction where only single parent is involved. It takes place in different forms: (i) Buddings- This process takes place in hydra and bacteria. A part of these organisms starts growing further and bulging out and gradually separates from the organisms when fully developed.

(ii) This type of reproduction takes place in amoeba. The nucleus of amoeba gets divided into two followed by division of their bodies. Each part gets a separate nucleus and develops into a separate amoeba. This type of reproduction is common in unicellular organisms.

7. Uterus

8. The transformation of larva into an adult through drastic changes is called metamorphosis.

9.

Internal fertilisation

- (i) Takes place inside the body of female
- (ii) Sperms are released by the male inside female's body

External fertilisation

- (i) Takes place outside the body of female
- (ii) Sperms are released in open

NCERT for Some Natural Phenomena

Select the correct option in questions 1 and 2.

Q.1. Which of the following cannot be charged easily by friction?

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

Ans. (b) A copper rod.

Q.2. 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.

Ans. (b) becomes positively charged while the cloth has a negative charge.

Q.3. Write 'T' against true and 'F' against false in the following statements:

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

Ans. (a) False (b) True (c) False (d) False

Q.4. Sometimes a crackling sound is heard while taking off sweater during winters. Explain.

Ans. The electric discharge takes place between body and sweater. At the time of electric discharge some energy is released. In this case energy is released in the form of crackling sound.

Q.5. Explain why a charged body loses its charge if we touch it with our hand.

Ans. When we touch a charged body, it loses its charge, due to the process of earthing. Our body is a good conductor of electricity. It transfers the charges to the earth.

Q.6. 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?

Ans. The scale used to measure earthquake is Richter Scale. Yes, it would be recorded by a seismograph. The earthquake with magnitude of 3 on Richter Scale is not likely to cause much damage.

Q.7. Suggest three measures to protect ourselves from lightning.

Ans. Three measures of protection are:

- (i) Stay under covered area or inside the room.
- (ii) We should not use TV or phone during lightning.
- (iii) We should not take bath during lightning.

Q.8. Explain why a charged balloon is repelled by another charged balloon whereas an uncharged balloon is attracted by another charged balloon.

Ans. A charged balloon is repelled by another charged balloon because both the balloons contain same type of charges. We know that like charges repel each other. A balloon is charged while other is uncharged so they have no same charge. Therefore charged balloon attracts uncharged balloon.

Q.9. Describe with the help of a diagram an instrument which can be used to detect a charged body.

Ans. An electroscope is used to detect that a body is charged or not. It works on the principle that like charges repel while unlike charges attract each other.

When the metal strips repel each other proves that the body is charged because repulsion is the sure test to detect that a body is charged or not.

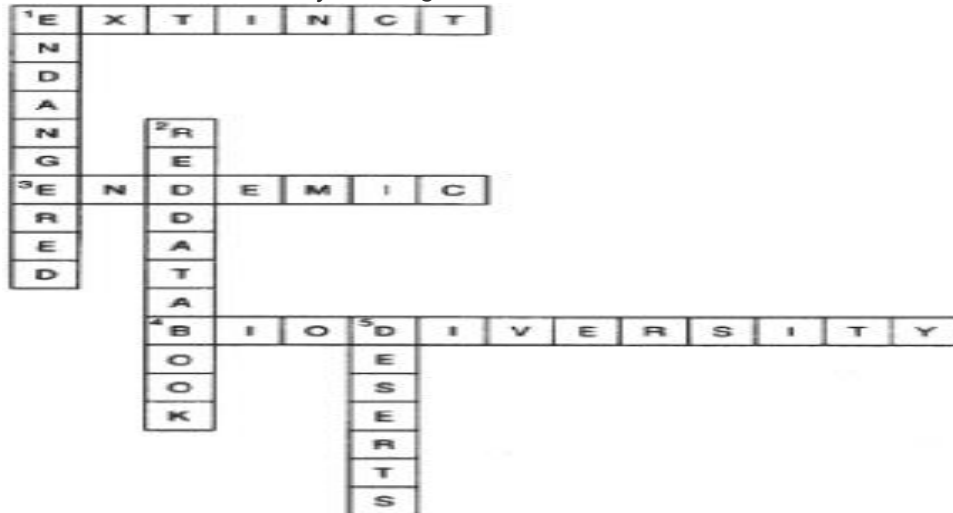


Fig. 15.5. A simple electroscope.

Q.10. List three states in India where earthquakes are more likely to strike.

Ans. (i) Kashmir (ii) Rajasthan (iii) Gujarat (iv) Punjab

Q.11. Suppose you are outside your home and earthquake strikes. What precautions would you take to protect yourself?

Ans. (i) We should move to an open space.

(ii) We should not take shelter under trees or buildings:

(iii) If we are driving, we should slow down the vehicle and move slowly away that area to a clear spot.

Q.12. The weather department has predicted that a thunderstorm is likel to occur on a certain day. Suppose you have to go out on that day. Would you carry an umbrella Explain.

Ans. No, we will not take an umbrella at the time of thunderstorm. The taking umbrella will increase the risk of lightning. The wide objects are more prone to lightning strike.

NCERT Solution for Conservation of Plants and Animals

QUESTIONS FROM TEXTBOOK

Q.1. Fill in the blanks:

(a) A place where animals are protected in their natural habitat is called

(b) Species found only in a particular area is known as

(c) Migratory birds fly to far away places because of changes.

Ans. (a) Wildlife sanctuary (b) Endemic species

(c) Climate.

Q.2. Differentiate between the following:

(a) Wildlife sanctuary and biosphere reserve

(b) Zoo and wildlife sanctuary

(c) Endangered and extinct species

(d) Flora and fauna.

Ans. (a) Wildlife sanctuary is the place where wild animals are protected in their natural habitat. Here poaching or capturing the animals is prohibited.

Biosphere reserves are the area used to conserve biodiversity like plants, animals and microorganisms. It contains many wildlife sanctuaries and national parks.

(b) Zoos are the places where some animals are protected in artificial habitats for public view.

Wildlife sanctuaries are used to protect and conserve wildlife in their natural habitats.

(c) The species which are at the verge of extinction and required protection and conservation are called endangered species.

The species which exist no more on the earth are called extinct species.

(d) Flora is used for wide varieties of plants we fauna is used to refer to all the varieties of animals.

Q.3. 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.

Ans. (a) Wild animals: Deforestation destroys the habitats of many wild animals. They are left to die without their natural shelter.

(b) Environment: Deforestation affect the environment adversely due to disturbance of ecological balance. The amount of carbon dioxide is increased in the atmosphere and causes global warming.

(c) Villages (Rural areas): The villagers depend on forests. They are closely related to forests. Due to deforestation various wild animals run to nearby villages and cause danger to them. Villagers will not get fruits, fuel, wood due to deforestation.

(d) Cities (Urban areas): Deforestation does not affect the life of cities directly badly but changes in climate affect cities.

Calamities like flood and droughts do not spare cities.

(e) Earth: Deforestation affects the earth. The fertile land of earth is converted into deserts and its temperature rises. It changes its climate and environment.

(f) The next generation: Many beautiful fauna and flora are destroyed due to deforestation. So, next generation will not be able to see them. They will not get clean and cool environment. They will not have clean and healthy environment.

Q.4. What will happen if:

(a) we go on cutting trees.

(b) the habitat of animal is disturbed.

(c) the top layer of soil is exposed.

Ans. (a) If we go on cutting trees then:

(i) Ecological balance is disturbed.

(ii) Earth will loose top fertile layer and will be converted into desert.

(iii) Floods and droughts will become more frequent.

(iv) Many animals lost their shelters.

(v) There will be a scarcity of things like fruits, paper which we get from forests.

(b) Animals become unprotected and unconserved when the habitat of animal is disturbed. It becomes endangered.

(c) Top layers of soil are fertile. If they are exposed, they lose their fertility and humus. It causes desertification.

Q.5. 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?
- Ans. (a) Biodiversity is conserved, to save them from extinction.
- (b) The protected forests are not also safe completely for wildlife because the poaching takes place at large scale in these areas. The poachers kill wild animals in those protected areas.
- (c) Some tribals depend on jungle for their food, cloths, shelter and other requirements.
- (d) Deforestation is caused due to urbanisation and industrialisation.
- Deforestation is responsible for desertification and natural calamities. Many species of plants and animals are destroyed due to deforestation.
- (e) Red Data Book is the record book and source book of all the endangered animals and plants.
- (f) Periodical movement of a species of birds from their native place to other places due to changes in climate is called migration. The purpose of migration is for breeding and to enjoy long summer days.

Q.6. 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 purposes? Discuss and prepare a brief report.

Ans. The continuously cutting of trees is not justified for any project. We not only cut the trees, we snatch away the shelters of many animals, birds and other organisms. The ecological balance is also disturbed. It also causes many natural calamities.

Q.7. How can you contribute to the maintenance of green wealth of your locality? Make a list of actions to be taken by you.

- Ans. (i) We can grow more and more plants in our locality.
- (ii) We can protect them and provide water to them.
- (iii) All the residents should be taught about the benefits of trees.
- (iv) They should also be taught about the harms of cutting trees.

Q.8. Explain how deforestation leads to reduce rainfall.

Ans. Plants are the main agent to maintain the water cycle in the environment. So cutting of trees reduces the rainfall of that area. If plants will not absorb water from soil they will not evaporate in the environment to form clouds. If clouds will not be formed then no rain-fall takes place. In this way deforestation reduces rainfall.

Q.9. Why should paper be saved? Prepare a list of ways by which you can save paper.

Ans. The wood pulps and the bark of trees are used in the manufacturing of paper. If paper is not saved it causes cutting more and more trees. So we should save paper to protect our trees.

Ways to Save Paper.

- (i) Paper should be recycled.
- (ii) We should not throw paper here and there.
- (iii) Waste paper should be collected and sent for recycling.

Q.10. 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.