



SSC Board: Std 7: Ch 1: The Living World: Adaptations and Classification –

Q bank -Answers

Exercise:

In what different ways is the diversity in living things seen?

A great variety of plants is found on the earth. Some plants have colourful flowers. Some plants grow in water whereas some are to be found in deserts which have a scarcity of water. Some plants are found only in snowy regions. Some plants cannot be seen without a microscope whereas some are huge in size.

Like plants, animals too show diversity. Some are unicellular, others, multicellular. Some are vertebrates whereas others are invertebrates. This world is full of a variety of animals - aquatic, terrestrial, amphibian, reptilian, aerial, etc.

Are the plants and animals from Kashmir and Rajasthan of the same type?

Can you elaborate on any differences between the two?

No, the plants and animals in Kashmir and Rajasthan are not of the same type.

In Kashmir we find coniferous trees like pine and deodar and in Rajasthan we find cactus plants.

In Kashmir animals like the yak and snow leopard are found and in Rajasthan camels are found.

Observe and complete the chart. (Include other plants from your own region too.)

Plants	Habitat	Type of root	Characteristic of leaves	Characteristic of stem
Lotus	Aquatic	Fibrous	Large and round with waxy layer	Hollow and flexible
Cactus	Desert	Fibrous	Absent or modified into spines	Thick and fleshy
Banyan	Humid and moist soil	taproot	Large, leathery and green	Thick and woody

What differences do you observe between terrestrial and aquatic plants?

Terrestrial Plants	Aquatic plants
Their habitat is terrestrial.	Their habitat is marine or fresh water.
They have a thick and rigid shoot system.	They have a weak shoot system.
They have a strong root system.	They have a weak root system.
Roots perform the function of anchorage and absorption of nutrients.	Roots perform the function of only anchorage.
Pollination is through agents like wind, insects and animals.	Pollination is through water.

Use your brain power!

1. Why does water trickle off lotus leaves?

The leaves of the lotus are covered with a waxy layer. This prevents the water from staying and it trickles off.

2. Why don't the leaves of these plants rot in water?

The surfaces of leaves and stems of many aquatic plants are covered with a waxy layer. This prevents water from sticking to it and therefore, they do not rot.

3. Why are the roots of aquatic plants short and fibrous?

The roots of the aquatic plants perform the function of only anchorage. Therefore the roots are short and fibrous.

In what way are sloping branches useful to plants in a snowy region?

In the event of heavy snowfall and extreme cold in these regions, their conical shape prevents the snow from accumulating on the tree. And thus prevents the tree from falling or breaking due to the weight of the snow.

What differences do you see between terrestrial and aquatic animals?

Terrestrial Animals	Aquatic Animals
These are found on land	These are found in marine or fresh waters.
Terrestrial animals breathe through their lungs	Aquatic animals breathe through their gills or skin.
Their skin is leathery.	Their bodies are slender and slimy.

Observe the bodies of the frog, duck and tortoise.

(1) Of what use are their legs to these animals?

The legs of the frog help it to leap as well as its webbed feet help it to swim in the water, so also the webbed feet of the duck help it to swim in the water and the legs of the tortoise help it to move on land.

(2) What helps frogs to breathe underwater?

Underwater, frogs breathe through their skin.

(3) Of what use are the long hind legs of a frog?

The long hind legs of a frog help it to take a long jump

(4) Why doesn't a duck get wet in water?

The duck has a gland in its tail that secretes oil, it takes this oil in its beak and spreads it on its feathers. This makes the feathers water proof, so the duck doesn't get wet in the water.

What is the function of canine teeth in carnivorous animals?

Carnivorous animals eat the flesh of other animals. Therefore their sharp canine teeth help them to tear the flesh of its prey and eat it.

Complete the following chart from your own observations.

Adaptation	Animal	Use of adaptation
Sharp teeth	Lion, tiger	To tear the flesh
Long and pointed beak	Humming bird	To eat nectar
Short beak	Sparrow, pigeons	Eating and feeding their young ones
Long and sticky tongue	Frog, lizards	To catch their prey
Long neck	Giraffe	To eat from tall trees

Why are living things classified?

It is difficult to study and remember all the organisms in this diverse living world at the same time Therefore living things are classified in order to study and know them better.

Which are the criteria used for classification of plants and animals?

Different scientists have used different criteria and independently classified plants and animals. A hierarchy is formed in the classification that starts with Kingdom Animalia or Kingdom Plantae; further groups and sub-groups are formed depending upon basic similarities and differences.

Textual Exercise:

1. Find my match!

'A' Group	'B' Group
(1) Lotus	(a) flower and leaves attract insects
(2) Aloe	(b) Haustorial roots for absorption of food
(3) Cuscuta	(c) Adapted to live in deserts
(4) Venus flytrap	(d) Adapted to live in water.

Ans. 1 – d, 2 – c, 3 – b, 4 - a

2. Read the paragraph and answer the following questions.

I am a penguin. I live in polar region covered by snow. My abdomen is white. My skin is thick with a layer of fat underneath. My body is spindle shaped. My wings are small. My toes are webbed. We live in flocks.

(a) Why is my skin white and thick and why is there a thick layer of fat underneath?

Your skin is white and black because of adaptation called camouflage, so you can hide yourself from predators and prey. There is a layer of fat underneath to keep you warm and to protect you from the severe cold.

(b) Why do we live in flocks sticking close to each other?

Living in flocks helps you to give warmth to each other and thus protect everyone from the severe cold.

(c) Which geographical region do I inhabit? Why?

You inhabit the regions of Antarctica, South Africa, Australia, New Zealand, Argentina, Chile and other cold regions because you have evolved and adapted yourself to survive the these cold regions

(d) Which adaptations should you have to enable you to live permanently in the polar region? Why?

The following are the adaptations one must have to live permanently in the polar region:

- 1) Thick skin covered with fur.
- 2) A layer of fat under the skin.
- 3) Body should be able to regulate its temperature
- 4) Should be able to prey and consume fish and other animals living in the region.

3. Who is lying?

(a) Cockroach – I have five legs.

-Is lying because it has six legs

(b) Hen – My toes are webbed.

-Is lying because its toes are not webbed, a ducks' toes are webbed.

(c) Cactus – My fleshy, green part is a leaf.

- Is lying because the fleshy green part is its stem and leaf.

4. Read each of the following statements. Write a paragraph about adaptation with reference to each statement.

(a) There is extreme heat in deserts.

Due to the extreme heat and severe scarcity of water, desert animals have adapted themselves in the following ways:

- (i) They have a thick skin to prevent loss of water from the body.
- (ii) Their legs are long with flat and cushioned soles; this helps them to protect their feet from the heat of the sand.
- (iii) The nostrils have folds of skin and the eyelashes are long and thick, this prevents the sand in entering during sand storms.
- (iv) Rats, snakes, spiders, lizards in deserts live in deep burrows during daytime to protect from the heat and are active at night when it is cooler.

(b) Grasslands are lush green.

- (i) Grasslands are lush green because the fibrous root of the grass prevents soil erosion and thus helps the grass to grow and flourish.
- (ii) The grass in the grassland is thick and tall, this helps the herbivorous animals to feed on them.
- (iii) Their teeth are strong for chewing tough plant material.
- (iv) The eyes of herbivores are below the forehead, on either side of the head; this gives them wide-angle vision which helps to protect them from predators.
- (v) Their legs are long and tapering with strong hooves, which enable them to run fast taking long leaps.
- (v) Their long and freely moving ears can receive sounds from long distances and different directions.
- (vi) On the other hand, carnivorous animals like the wild dog, fox, tiger and lion have strong legs to run fast and capture their prey.
- vii) They have claws and their canine teeth are sharp and pointed to capture and eat their prey
- (viii) Tigers have padded paws to enable them to silently stalk their prey and capture it easily.
- (ix) The eyes of predatory carnivores are located in the front of their head to help them to spot their prey from a long distance.
- (x) The tall thick grass and the skin colour helps the predators (tigers and lions) and prey (deer and blackbuck) to camouflage them.

(c) Insects are found in large numbers.

Insects are found in a wide range of climatic environment. In order to survive in the ever changing weather and climate, the insects have adapted themselves and thus are able to survive.

- (i) The body of insects is light in weight and tapers at both ends.
- (ii) They can fly with two pairs of wings and also walk with six stick-like legs.
- (iii) The shape of the body and the colour of the skin helps the insects to camouflage. Thus they are able to protect themselves from birds and other animals that prey on them.

(d) We hide.

Most of the animals are able to camouflage themselves because of the shape of their bodies and the colour of their skin. This helps them to blend into the environment and thus hide themselves from their predators.

(e) We have long ears.

The long and freely moving ears can receive sounds from long distances and different directions. And thus take quick action and run from any danger.

5. Answer the following.

(a) Why is the camel called the ‘Ship of the desert’?

Camels are the best and cheapest mode of transport in the desert. Just like the ship can sail in the sea, so also a camel can move and survive in a desert. The camel has adapted itself to the desert. It has long legs and flat and cushioned soles to protect from the hot sand. It has a hump to store water and food. The nostrils are protected by folds of skin and the eyelashes are long and thick to protect during sand storms.

(b) How can the plants like cactus and acacia live in deserts with scarce water?

Plants like the cactus and acacia have adapted themselves to survive in the desert.

- (i) The leaves are absent or modified into spines, this helps in the loss of water.
- (ii) The stems are green and fleshy, so the stems perform photosynthesis and stores food and water.
- (iii) Their roots penetrate deep into the soil and some roots spread away into the soil in search of water.
- (iv) There is a thick layer of a waxy substance on the stems of these plants, this prevents loss of water.

(c) What is the inter-relationship between adaptations of organisms and their surroundings?

We find organisms in a wide range of climatic environment. In order to survive in the ever changing weather and climate, the organisms have adapted themselves. They undergo a gradual change to adapt into the various factors of the environment that they live in.

(d) How are organisms classified?

Different scientists have used different criteria and independently classified plants and animals. A hierarchy is formed in the classification that starts with Kingdom Animalia or Kingdom Plantae; further groups and sub-groups are formed depending upon basic similarities and differences. Binomial nomenclature is used to identify each organism.

All identified organisms have been assigned a binomial name as per the guidelines of the International Code of Nomenclature.

Activity: Find out how the gradual adaptation from primitive man to modern man must have taken place.

According to Charles Darwin, if an organism is born with a new beneficial characteristic and is able to survive, this change is preserved in the next generation. This is Darwin’s second principle and is called the theory of ‘natural selection’.

HOW DID HUMANS EVOLVE?

Primates, like humans, are mammals. Around ten to twelve million years ago, the ancestral primate lineage split through speciation from one common ancestor into two major groups. These two lineages evolved separately to become the variety of species we see today. Members of one group were the early version of what we know today as the great apes (gorillas, chimpanzees, and bonobos in Africa, orangutans in Asia) that is, the modern great apes evolved from this ancestral group. They mostly remained in forest with an arboreal lifestyle, meaning they live in trees. Great apes are also quadrupeds which means they move around with four legs on the ground. The other group evolved in a different way. They became terrestrial, meaning they live on land and not in trees. From being quadrupeds they evolved to bipeds, meaning they move around on their two back legs. In addition the size of their brain increased. This is the group that, through evolution, gave rise to the modern current humans. Many fossils found in Africa are from the genus named *Australopithecus* (which means southern ape). This genus is extinct, but fossil studies revealed interesting features about their adaptation toward a terrestrial lifestyle.

The above article is taken from: <https://kids.frontiersin.org>