Lesson 7. Weather, Climate and Adaptations of Animals To Climate

Grade: VII

Basic concepts – A Flow Chart

WEATHER

- Weather is the day-to-day condition of the atmosphere at a place influenced by factors like humidity, Rainfall, Temperature, Wind Speed, etc.
- Humidity is the amount of water vapor present in the atmosphere and is measured by a hygrometer.
- Sun causes all weather changes.

Climate

- It is the average weather conditions at a specific place over a much longer period of time.
- **Factors affecting climate:**
    - Amount of sunshine.
    - Whether the region is hilly or a plain.
    - Distance from the sea.
    - Direction of prevailing winds from the sea side Brings rain to coastal areas and dry weather to inland areas.
    - Ocean currents .
    - Distance from the equator.

Migration

- It is the mass movement of animals, mostly birds, from colder places to warmer regions to escape the cold, to breed or due to breed or due to shortage of food.
- Birds are guided by the sun during the day and the stars at night.
- Example: Silberian crane comes to India from Siberia every year.

Adaptations to Climate

The features and habits that help animals to live in a habitat are called **adaptations.**

Polar Regions

- Polar regions have extreme climate.
- Sun does not rise at poles for 6 months and does not set for the other 6 months.

Tropical Rainforests

- Have hot summers and plenty of rainfall.
- Days and nights are almost equal in length throughout the year.

Deserts

- Have extreme climate .
- Receive less rainfall and large amount of sunlight.

Polar Bears

- White fur for camouflage. broad paws with rough skin and rough hair to avoid slipping while walking on ice.
- Two thick layers of fur and a thick layer of fat just below its skin to protect from cold.
- Black skin that absorbs heat.
- Fur is transparent and allows light to pass through.
- Extra transparent eyelids to protect eyes from snow blindness.

Penguins

- Thick skin to protect from cold
- White body merges well with the background.
- Streamlined body and webbed feet that help it to swim in water.
- . Huddle up together to keep themselves warm.

Lion- tailed Macaque

- Spends major part of its life on the tree and is a good climber.
- Feeds on stems, leaves, seeds, flowers, buds and insects under the bark of the trees.
- Rarely comes down since it gets sufficient food on the trees.

Elephant

- Strong senses of smell.
- Uses it trunk for smell and to hold food.
- Long ears that help it to keep cool in the hot and humid climate and to hear very soft sound.

Camels

- Broad feet to walk easily on the soft sand without sinking.
- Store food in its hump.
- Thick lips to enable it to eat prickly desert plants without pain. Long eyelashes that keep sand out. Nostrils to keep out sand.
- Long legs that keep the sand's heat away from its body.
- Long hair that keep it warm during the cold desert nights.
- Extra transparent eyelid in each eye to remove the sand.

➢ **Adaptation** : Features and habits that help animals to adapt to their surroundings are a result of the process of evolution.

➢ **Climate** : The average weather pattern taken over a long time, say 25 years, is called the climate of the place.

➢ **Polar Region** : The polar regions present an extreme climate. These regions are covered with snow.

➢ **Rain Gauge** : Rainfall is measured by an instrument called the rain gauge.

➢ **Tropical Region** : The tropical region has generally a hot climate because of its location around the equator.

➢ **Weather** : The day-to-day condition of the atmosphere at a place with respect to the temperature, humidity, rainfall, wind-speed etc., is called the weather of that place.

Objective Type Questions **(1 Mark each)**

> **I. Multiple choice questions**

1. Maximum temperature of the day occurs generally in :

    (a) After noon   (b) At sun rise   (c) At sun set   (d) Evening

2. All the changes of weather are caused by :

    (a) Stars   (b) Sun   (c) Earth   (d) Moon

3. The tropical desert climates is found in :

    (a) Rajasthan   (b) Kerala   (c) Kashmir   (d) Delhi

4. The climate found in Kerala is :

    (a) Very hot and wet (b) Wet   (c) Hot and dry   (d) Moderately hot and dry

5. Which one is not the part of the weather report ?

    (a) Humidity   (b) Temperature   (c) Rainfall   (d) Pressure

6. The climate in polar region is :

    (a) Extremely hot   (b) Moderately hot   (c) Extremely cold   (d) Moderately cold

7. The water vapour present in the air condense in the form of :

    (a) Rainfall   (b) Fog   (c) Snow   (d) All of these

8. Humidity in the air is generally high in :

    (a) Winter   (b) Monsoon   (c) Summer   (d) All of these

9. The maximum and minimum temperature displayed daily in the weather bulletin refer to the :

[NCERT Exemplar]

    (a) highest day temperature and lowest night temperature of the day

    (b) highest day temperature and highest night temperature of the month

    (c) temperature recorded at 12 noon and at mid night (00.00 hrs.)

    (d) average highest temperature of day and average lowest temperature of night

10. Out of the given definitions, which is the most appropriate definition of climate ?

[NCERT Exemplar]

    (a) Changes in weather conditions in a year

    (b) Average weather pattern of many years

    (c) Change in weather pattern in a few years

    (d) Weather conditions during summer

11. Which of the following briefly describes the desert climate ?   **[NCERT Exemplar]**

    (a) Hot and humid   (b) Dry and humid   (c) Hot and dry   (d) Hot and wet

12. Paheli went to a wildlife sanctuary where she saw dense vegetation of trees, shrubs, herbs

    and also a variety of animals like monkeys, birds, elephants, snakes, frogs etc. The most

    likely location of this sanctuary is in the :   **[NCERT Exemplar]**

    (a) temperature region   (b) tropical region

    (c) polar region   (d) coastal region

13. Given below are some adaptive features of animals :

    (i) Layer of fat under the skin

    (ii) Long, curved and sharp claws

    (iii) Slippery body

    (iv) Thick white fur

    Which of them are the adaptive features of a polar bear ?   **[NCERT Exemplar]**

    (a) (i) only   (b) (i) and (ii) only

    (c) (i), (ii) and (iii) only   (d) (i), (ii) and (iv) only

14. Which of the following statement is incorrect for penguins ?   **[NCERT Exemplar]**

    (a) They hurdle together   (b) They cannot swim

    (c) They have webbed feet   (d) They have streamlined body

15. Read the following environmental conditions of tropical rain forests :   **[NCERT Exemplar]**

    (i) Hot and humid climate

    (ii) Unequal lengths of day and night

    (iii) Abundant rain fall

    (iv) Abundant light and moisture Identify the conditions from the above list that are responsible for the presence of large member of plants and animals in tropical rain forests :

                                           [NCERT Exemplar]

    (a) (i) and (ii)   (b) (i) and (iii)   (c) (i), (iii) and (iv)   (d) (ii) and (iv)

16. The coldest region on earth is the :   **[NCERT Exemplar]**

    (a) polar region   (b) tropical region   (c) temperate region   (d) coastal region

17. Choose the odd one from the following options :   **[NCERT Exemplar]**

    (a) Thick layer of fat under the skin   (b) White fur

    (c) Long grasping tail   (d) Wide and large feet with sharp claws

1. a	2. b	3. a	4. a	5. d	6. c	7. d	8. b	9. a
10. b	11. c	12. b	13. d	14. b	15. c	16. a	17. c	

II. Multiple choice questions

1. Which of the following is the climate found in Kerala?

    (a) Very hot and wet   (b) Wet

    (c) Hot and dry   (d) Moderately hot and moderately dry

2. Which of the following is not the part of daily weather report?

    (a) Pressure   (b) Temperature   (c) Rainfall   (d) Humidity

1. a	2. a

I. Fill in the blanks

1. Red eyed frog live on _____.

2. Elephant uses its _____ as a nose.

3. _____ is the amount of water vapour present in air at a certain temperature.

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4. Tusks of elephant are modified _____.

5. Lion tailed macaque is also known as _____ape.

6. The fur of polar bear has_____ layers.

7. To obtain food, bird toucan has a _____beak.

8. Rainfall is measured by _____.

9. Tropical forests have a hot and_____climate.

10. In birds, _____ is a method to escape the harsh and cold conditions.

11. Weather of a place is the day-to-day condition of the ____(a)____ with respect to

____(b)____ , ____(c)____ , ____(d)____ , ____(e)____ at that place, while climate is the

____(f)____ weather pattern taken over many years.   **[NCERT Exemplar]**

1. trees	2. trunk	3. humidity
4. teeth	5. beard	6. two
7. long	8. rain gauge	9. humid
10. migration	11. (a) atmosphere, (b) temperature, (c) humidity, (d) rainfall, (e) wind speed, (f) average.	

II. Fill in the blanks

i. Like polar bears _____ are also good swimmers.

ii. The polar bears have two thick layers of fur to protect them from _____.

iii. Penguins are well-known animals which live in _____ regions.

i. penquine	ii. cold	iii. polar

I. Match the following

Column A	Colum B
i. Red-eyed frog	a. Long and strong claws
ii. Elephant	b. Migrate to warmer regions
iii. New world monkey	c. Sticky pade on its feet
iv. Polar bear	d. Trunk and tusks
v. Birds	e. Long tail

i. c	ii. d	iii. e	iv. a	v. b

II. Match the following

I. Column A	Colum B
a. Eye	i. Long and strong claws
b. Red eyed frog	ii. Cranes
c. New world monkey	iii. Instrument to measure rainfall
d. Migrate	iv. Huddle together
e. Rain gauge	v. Sticky pods on its feet
f. Meteorologists	vi. Migration
g. Penguin	vii. Prepare weather report
h. Polar bear	viii. Long tail

a. vi	b. v	c. viii	d. ii	e. iii	f. vii	g. iv	h. i

II. Column A	Colum B
a. Red eyed frog	i. Very sensitive hearing
b. Penguin	ii. Streamlined body
c. Tiger	iii. Silver-white mane
d. Lion-tailed macaque	iv. Sticky pads on feet

a.	b. ii	c. i	d. iii

III. Match the following

I. Column I	Colum II
a. Large crystals	i. Turns lime water milky
b. Depositing a layer of zinc on iron	ii. Physical change
c. Souring of milk	iii. Rust
d. Carbon dioxide	iv. Sugar candy (Misbri)
e. Iron oxide	v. Chemical change
f. Dissolving common salt in water	vi. Galvanisation

a. iv	b. vi	c. v	d. i	e. iii	f. ii

I. True or False

(a) It is easy to predict weather rather than climate.

(b) Since very few prey are available, polar bear does not need to have strong sense of smell.

(c) Penguins stick together to fight the cold polar climate.

(d) Tropical rain forests are cool and humid throughout the year because of heavy rains all the time.

[NCERT Exemplar]

(a) False, it is easy to predict the climate rather than the weather.
(b) False, (since very few prey are available) polar bear need to have a strong sense of smell.
(c) True.
(d) False, tropical rain forests are hot and humid throughout the year because of heavy rains all the time.

II. True or False

i. Tusks of the elephant are the modified teeth.

ii. Typical desert climate is found in Rajasthan.

iii. All the changes in the weather are due to the moon.

iv. Lion-tailed macaque feeds mainly on wheat.

v. Migration means to escape the favourable and pleasant conditions.

1. True	2. True	3. False	4. False	5. False

Quiz Time

1. What is the term used for the day to day conditions of the atmosphere at a place?

2. Name the elements of the weather.

3. Name two countries that belong to tropical regions.

4. Which department prepares the weather report?

5. Are the days in summer shorter or longer?

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6. What type of climate is there in Rajasthan?

7. Name two regions where severe climate conditions occur.

8. Give the names of two animals found in rains forests.

9. Name two countries that belong to polar regions.

1. Weather

2. Temperature, rainfall, humidity and the wind speed are the elements of the weather.

3. India and Malaysia.

4. Meteorological department.

5. Longer.

6. Dry and hot.

7.   i. Polar regions   ii. Tropical regions

8.   i. Tigers   ii. Apes

9. Canada and Greenland.

NCERT Corner

Intext Questions

1. Fill all the columns according to the data in the chart that you have prepared.

Date	Max temp. (^{0}C)	Min temp. (^{0}C)	Min humidity (%)	Max humidity (%)	Rainfall* (%)
23.08.06	36.2	27.8	54	82	....
24.08.06	37.1	28.1	48	79	....
25.08.06	36.6	28.2	45	85	....
26.08.06	36.8	27.1	56	91	....
27.08.06	35.1	24.7	61	95	5mm
29.08.06	33.6	24.1	71.5	100	15mm
30.08.06	35.0	24.7	63	87	....
31.08.06	35.6	24.1	63.5	86	....

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2. I wonder why weather changes so frequently!

For the simple reason that factors affecting weather like temperature, humidity etc. change very fast.

3. What is the source of weather in the first place?

All changes in the weather are brought about by sun.

4. Can you guess when during the day we have the maximum temperature and when the minimum?

The maximum temperature of the day is recorded mostly in the afternoon while the minimum temperature is recorded usually in the early morning.

5. What about the times of sunrise and sunset?

They change with the season. During summer the sun comes out early and sets late while during winter it rises late and sets early.

6. Are the days shorter in winter than in summer?

Yes.

7. Take an outline map of the world. Mark the polar regions and tropical regions.

POLAR REGION

TROPICAL REGION
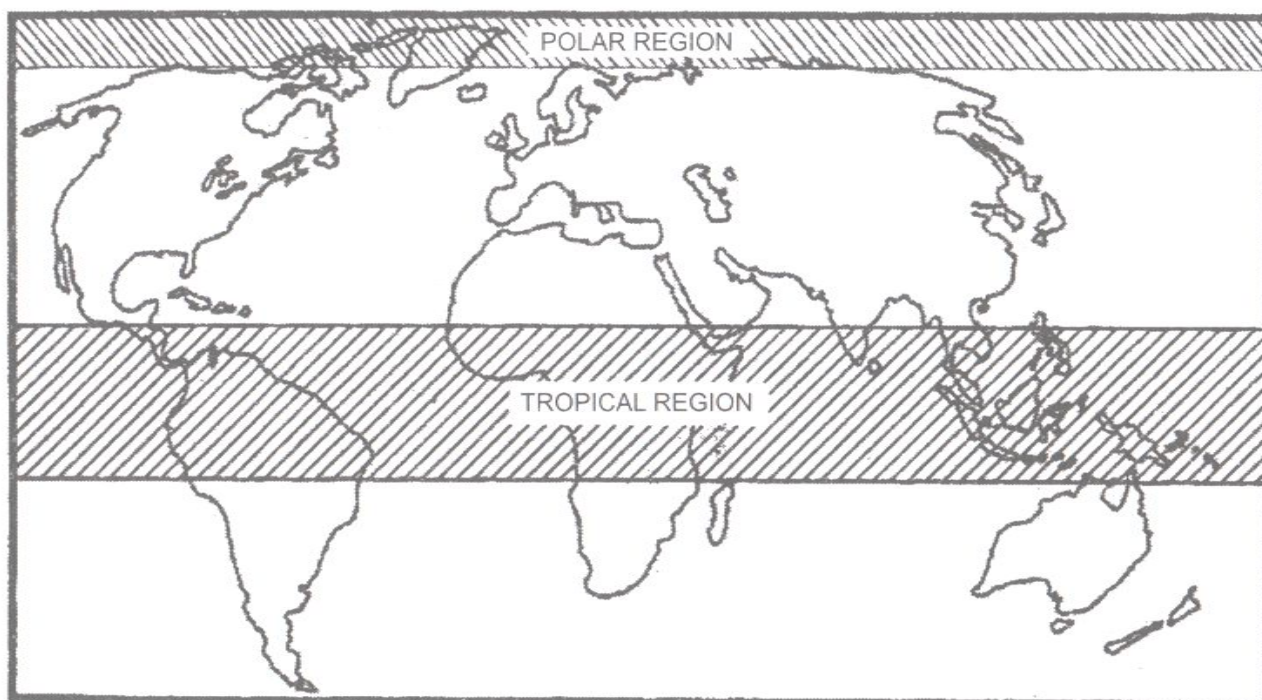
8. Do fishes and butterflies also migrate like birds?

Yes.

1. Name the elements that determine the weather of a place.

Temperature, rainfall, humidity.

2. Fill in the blanks:

(i) The average weather taken over a long time is called _____.

(ii) The place receives very little rainfall and the temperature is high throughout the year, the climate of that place will be _____and_____.

(iii) The two regions of the earth with extreme climatic conditions are _____ and _____.

(i) climate	(ii) hot, dry	(iii) pole, desert

3. Indicate the type of climate of the following areas :

(a) Jammu and Kashmir : _____

(b) Kerala : _____

(c) Rajasthan : _____

(d) North-East India : _____

(a) Cold and wet,

(b) Hot and wet,

(c) Hot and dry,

(d) Hot and wet.

4. Which of the two changes frequently, weather or climate ?

Weather.

5. Following are some of the characteristics of animals ?

(i) Diets heavy on fruits   (ii) White fur Need to migrate

(ii) Need to migrate   (iv) Loud voice

(v) Sticky pads on feet   (vi) Layer of fat under skin

(vii) Wide and large paws   (viii) Bright colours

(ix) Strong tails   (x) Long and large beak

For each characteristics indicate whether it is adaptation for tropical rainforests or polar regions. Do you think that some of these characteristics can be adapted for both regions?

| (i) Tropical | (ii) Polar | (iii) Both | (iv) Both | (v) Polar |
| (vi) Polar | (vii) Polar | (viii) Tropical | (ix) Tropical | (x) Tropical |

6. The tropical rainforest has a large population of animals. Explain why it is so ?

This is due to continuous warmth and rain, this region is most suitable for wide variety of plants and animals.

7. A carnivore with stripes on its body moves very fast while catching its prey. It is

likely to be found in :

(i) polar regions **(ii) deserts**

(iii) oceans **(iv) tropical rainforests.**

(iv) tropical rainforests

8. Which features adapt polar bears to live in extremely cold climate ?

(i) A white fur, fat below skin, keen sense of smell.

(ii) Thin skin, large eyes, a white fur.

(iii) A long tail, strong claws, white large paws. White body, paws for swimming, gills for respiration.

(iv) While body, paws for swimming,

(i) A white fur, fat below skin, keen sense of smell.

9. Which option best describes a tropical region ?

(i) hot and humid

(ii) moderate temperature, heavy rainfall

(iii) cold and humid

(iv) hot and dry

(i) Hot and humid.

I. Very Short Answer Type Questions

1. What is humidity ?

The measurement of the moisture in the air is called humidity.

2. Who prepares the weather report ?

The meteorological department of the government prepares the weather report.

3. Name the instrument which is used to measure rainfall.

Rain gauge.

4. Name any two main elements of weather.

Temperature, humidity, wind-speed.

5. Why it is not easy to predict weather ?

Weather is a very much complex phenomenon, so it is not easy to predict.

6. Name the thermometer used to record maximum and minimum temperature in a day.

Maximum and minimum.

7. Are the days shorter in winter than in summer ?

Yes, the days are shorter in winter than in summer.

8. What percentage of the Earth's surface is covered by rain forest ?

6%

9. Which region is very cold on earth ?

Polar region.

10. Where do you find (i) polar and (ii) tropical region on the Earth ?

(i) Polar   -   North and South pole.

(ii) Tropical   -   Around the equator.

11. What does camouflage mean ?

To mingle with the surrounding backgrounds.

12. Give one word substitute for the areas with hot and dry climate.

Desert.

13. Name some animals found in polar regions.

Polar bear, penguins, foxes, seals.

14. Name some animals found in rain forest.

Monkeys, apes, lions.

15. Name some countries that belong to tropical rain forests.

India, Malaysia, Brazil.

1. What do you mean by hot climate?

If the temperature at a place is high, most of the time, then it implies hot climate at that place.

2. What do you mean by hot and wet climate?

If there is heavy rainfall with high temperature on most of the days at any place, then its climate is said to be hot and wet climate.

3. What type of climate is there in Rajasthan?

The climate in Rajasthan is hot and dry which is called typical desert climate.

4. What is the main cause of the change in weather?

Sun is the main cause of the changes in weather.

5. Write the difference between the climates of Kerala and Kashmir.

Climate of Kerala is very hot and wet while the climate of Kashmir is moderately hot and wet.

6. Name two regions which have severe climate conditions.

    i. Polar regions   ii. Tropical regions

7. What do you mean by the term adaptation?

The modifications of the features and the functions of the body according to the climatic conditions are called adaptation.

8. Name some countries that belong to polar regions.

Canada, Greenland, Iceland, Norway, Sweden, Finland, Alaska and Siberian regions of Russia.

9. Write the names of two animals which live in Indian tropical rainforests.

Beard ape and elephants.

10. What are factors which help to predicts weather for a day?

Temperature, humidity, rainfall.

11. What are elements of the weather?

Temperature, humidity and other factors are called the elements.

12. Can the weather remain same for some period?

No, weather vary over very short periods of time.

13. How many poles of earth are there?

There are two poles of earth.

i. North Pole   ii. South Pole

14. Name two countries that belongs to polar regions.

i. Canada   ii. Sweden

15. Name two countries where countries where tropical rainforests are found.

i. India   ii. Brazil

16. Write the names of two animals which live in polar regions.

i. Foxes   ii. Whales

III. Very Short Answer Type Questions

1. Unscramble the following words using the hints given against them.

a. MATLICE   (Hint: Weather pattern in a region over a period of time)

b. AROPL   (Hint : Coolest region on earth)

c. TREHMEOMRET   (Hint : Used to measure temperature)

d. UHIDYTMI   (Hint : feature of weather)   **[NCERT Exemplar]**

a. CLIMATE   b. POLAR   c. THERMOMETER   d. HUMIDITY

2. Which of the two changes frequently, weather or climate?   **[NCERT]**

Weather changes frequently.

3. Define camouflage.

It is a method of hiding in which an otherwise visible organism becomes unnoticeable by blending with its environment.

4. How do birds find direction when they migrate?

Birds are guided by the sun during the day and by the stars at night during migration.

1. Why is it difficult to predict the weather of a place while it is easy to predict its climate? [NCERT Exemplar]

Weather is a complex phenomenon which can vary over a short period of time and thus is difficult to predict. It is easier to predict climate as it is the average weather pattern taken over a long time.

2. Name two animals each that live in polar region and tropical rainforests.

[NCERT Exemplar]

Polar regions : Polar bear / penguin / reindeer / musk oxen / any other. (Any one)

Tropical rainforest : red-eyed frog / elephant / lion-tailed macaque / any other.

(Any one)

3. Write two common adaptive features of a polar bear which help in keeping it warm.

[NCERT Exemplar]

Layer of fat under skin, thick white fur.

4. Mention two adaptive features of penguin that help it in swimming. [NCERT Exemplar]

Streamlined body, webbed feet.

5. Distinguish between migration and hibernation.

S.No	Migration	Hibernation
i	It is the movement of an organism from one place to another	It is the dormancy period in winters.
ii	It is not necessarily in polr regions	It is generally in polar regions.
iii	For example, Siberian cranes	For example, polar bears

6. Name the elements that determine the weather of a place. [NCERT]

a. Temperature   b. Rainfall   c. Humidity   d. Wind speed

7. Explain, with examples, why we find animals of certain kind living in particular climate conditions. [NCERT]

The habitat of animals depends on the ability of the animal to adapt to those conditions. For example, polar bears adapt to cold polar region and camels adapt to hot dry desert conditions. Polar bears have thick skin with thick white fur which helps to keep them warm in polar region. These features are not useful in desert area.

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8. How do elephants living in the tropical rainforest adapt itself?   **[NCERT]**

   Following are the adaptations of elephants

   a. They have a strong sense of smell for which they use their trunk.

   b. Its trunk is also used for picking up and holding food.

   c. They have long ears that help them to keep cool in the hot and humid climate and to hear very soft sounds.

   d. Its tusks are used to tear bark of trees for consumption.

9. How is a camel adapted to live in the desert?

   Camels have broad feet to walk in sand, hump to store food, thick lips to eat prickly desert plants, long eyelashes and transparent eyelids to keep sand out of eyes.

10. Write three adaptation in a polar bear that help it to survive in the polar regions.

   a. White fur acts as a camouflage.

   b. Broad paws with rough skin to prevent slipping on snow.

   c. Two thick layers of fur to protect from cold.

11. How do small desert animal like scorpions escape from the heat of the desert?

   Small desert animals escape from heat by staying in burrows during the daytime. The come out at night when the climate is cooler.

II. Short Answer Type Questions

1. What do you mean by weather?

   The day-to-day conditions of the atmosphere at a place with respect to the temperature, humidity, rainfall, wind speed, etc. is called the weather at the place.

2. How does the sun cause the changes in the weather?

   Sun is a huge sphere of hot gases burning at a very high temperature. The distance of the sun from us is very large. Even then, the energy sent out by the sun is very large in amount. So, sun is the primary sources of energy that causes changes in the weather. Energy absorbed and reflected by the earth's surface, oceans and atmosphere play important roles in determining the weather at any place.

3. What is the maximum and minimum thermometer? When do you measure the maximum and minimum temperature of a day?

The special thermometers which are used to measure the maximum and minimum temperature of a day are called maximum and minimum thermometers.

The maximum temperature of the day occurs in afternoon while the minimum temperature occurs generally in the early morning.

4. What is the climate of any place?

The average weather pattern taken over a long time, say 25 years, is called climate of that place. If we find that the temperature at a place is high most of the time, then we say that climate of that place is hot, if there is also heavy rainfall on most of the days in the same place, then we can say that the climate of that place is hot and wet.

5. Write the different between weather and climate of a place.

Weather	Climate
i. It is day-to-day conditions of atmosphere at a place.	i. It is average weather pattern taken over a long time.
ii. It can vary over very short period of time	ii. It does not vary in a short period of time.
iii. It cannot affect the adaptation of organisms.	iii. It affects the adaptation of organisms.

6. Describe the climate of Rajasthan in India.

The temperature is high during most part of the year in Rajasthan. But during winter, which lasts only for a few months, the temperature is quite low. This region receives very little rainfall. Such type of climate is called typical desert climate. It is hot and dry.

7. Explain the climate of polar regions.

The polar regions present an extremes climate. These regions are covered with snow and it is very cold for most part of the year. The sun does not set for six months and does not rise for other six months. In winter, the temperature can be as low as -37^{0}C.

8. Explain the adaptation of Penguins to live in polar regions.

Penguin is a well-known animal which lives in polar regions. It is white and merges well with the white background. It has a thick skin and a lot of fat to protect it from cold. Penguins huddle together to keep themselves warm. Penguins are also good swimmers. Their bodies are streamlined and their feet have webs making them good swimmers.

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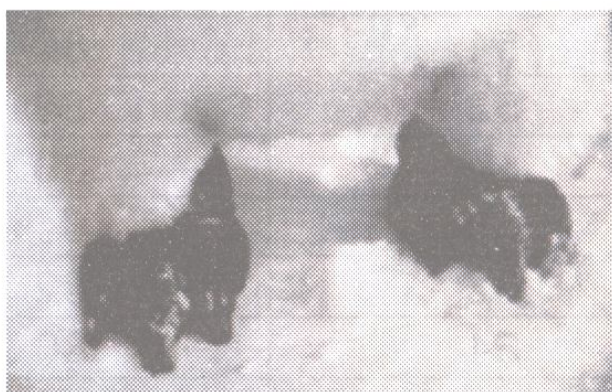
9. What are migratory birds?

Some species of birds live in polar regions. They migrate to warmer regions when winter sets in, they come back to their native place after the winter is over. Such birds are known as migratory birds. Such birds travel as much as 15000 km to escape the extreme climatic conditions at home. India is one of the destinations of many of these birds. Bharatpur in Rajasthan and Sultanpur in Haryana are the most famous places for the migration of such birds.

10. What is the climate of tropical regions?

The tropical regions have generally a hot climate because of their location around the equator. Even in the coldest month the temperature is generally higher than about 15^0C. During summer the temperature may cross 40^0C. These regions get plenty of rainfall. An important feature of these regions is the tropical rainforests.

11. Explain the adaptation of red-eyed frog to live in tropical regions.

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Red-eyed frog lives on trees. It has developed sticky pads on its feet to help it to climb the trees on which it lives. Their feet are such that they can easily hold on to branches.

12. Explain the adaptation of elephant to live in tropical rainforests.

Elephant has adapted to the conditions of rainforests in many remarkable ways. It has a trunk which is used as nose so that it has a strong sense of smell. The trunk is also used to pick up the food. Its tusks are modified teeth. These can tear the bark of trees that elephant loves to eat. Large ears of elephant help it to hear even very soft sounds. They also help the elephant to keep cool in the hot and humid climate of the rainforests.

13. Which department prepare weather report?

The meteorological department of the government prepares the weather reports. This department collects data on temperature, wind, humidity, etc. and makes the weather report.

14. Weather is a complex phenomenon. Explain why?

The weather is a complex phenomenon that it can vary over very short periods of time. It can happen sometimes that it is sunny in the morning, but suddenly clouds appear from nowhere and it starts raining heavily or a heavy rain may vanish in a matter of minutes and give way to bright sunshine.

15. What are the steps of mean temperature?

i. We find the average of the temperature recorded during the month.

ii. We calculate the average of such average temperature over many years. That gives the mean temperature.

III. Short Answer Type Questions–I

1. What do you mean by weather ?

The day-to-day conditions of the atmosphere at a place with respect to the temperature, humidity, rainfall, wind speed etc. is called the weather at that place.

2. How do we define climate of a place ?

The climate of a place is the actual average weather pattern of that place. The average weather pattern taken over a long time say 25 years is called the climate of the place.

3. Why do we feel so miserable in summer afternoons and comparatively comfortable in the early morning ?

As the maximum temperature of the day occurs generally in the afternoon while the minimum temperature occurs generally in the early morning. Due to these reasons we feel so miserable in the afternoon and comparatively comfortable in the afternoon and comparatively comfortable in early morning.

4. How minimum and maximum temperature recorded ?

There are special thermometers for this purpose that are called maximum and minimum thermometers. The maximum temperature is generally of afternoon and minimum that of early morning time.

5. What information does the daily weather report carries ?

It gives the following information :

➤ Maximum and minimum temperature of past 24 hours.

➤ Humidity/Relative humidity.

➤ Rainfall.

➤ Time of sunrise and sunset.

➤ Time of moonrise and moonset.

➤ Prediction of weather for present day.

6. What are the characteristics of place which are called hot and wet ?

If we find that the temperature of a place is high most of the time, we say that the climate of the place is hot. If there is also a heavy rainfall on most of the days in the same place. Then we can say that climate of that place is hot and wet.

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7. In which way large and wide paws are helpful to polar bears ?

Polar bear's long and wide paws help it in swimming and walking with ease in snow.

8. In which way white fur is advantageous for polar bear ?

The polar bear has white fur so that they are not easily visible in the snowy white background. It protects them from their predators. It helps them in catching their prey and protects from cold.

9. What are the characteristics of a typical desert climate ?

In desert, temperature is high during most part of the year. But during winters which lasts for a few months, the temperature is quite low. Desert regions receive very scanty rainfall. Desert climate is hot and dry.

10. Mention two adaptive features of penguin that help it in swimming. [NCERT Exemplar]

Streamlined body, webbed feet.

11. Differentiate between :

(i) Weather and climate

(ii) Humidity and rainfall

(iii) Climates of polar region and tropical rain forest

(iv) Maximum and minimum temperatures of the day   [NCERT Exemplar]

(i) Weather is the daily fluctuation in temperature, humidity etc., while climate is the average weather pattern of a place.

(ii) Humidity indicates the wetness of a place due to amount of moisture in the atmosphere while rainfall is the drops of water that fall from clouds on the ground.

(iii) Polar region remains very cold for most part of the year whereas tropical rain forest is hot and humid.

(iv) Maximum and minimum temperature of the day indicate highest and lowest recorded temperature, respectively.

III. Short Answer Type Questions-II

1. What characteristics does a polar bear possess for :

(i) Protecting them from predators ?

(ii) Protecting them from extreme cold ?

(iii) Avoiding getting over heated ?

(i) White fur.

(ii) Two layers of fur, layer of fat under skin and presence of small ears.

(iii) They rest often to avoid getting overheated and go for swimming.

2. "The polar region presents an extreme climate", comment on the statement.

Polar regions present an extreme climate because :

(i) These regions are covered with snow and it is very cold for most part of the year.

(ii) For six months the sun does not set at the poles while for another six months it does not rise.

(iii) In winters, the temperature can be as low as - 37°C.

3. How is the mean temperature of a given month determined?

The mean temperature for a given month is found in two steps :

(i) First we find the average of the temperatures recorded during the month.

(ii) Second we calculate the average of such average temperature over many years. That gives the mean temperature.

4. How does sun cause the changes in the weather?

Sun is a huge sphere of hot gases burning at a very high temperature. The distance of the sun from us is very much. Even then the energy sent out by the sun is very large in amount. So, sun is the primary source of energy that causes change in the weather. Energy absorbed and reflected by the Earth's surface, oceans and atmosphere play an important role in determining the weather at any place.

I. Long Answer Type Questions.

1. How elephant is adopted to the conditions of tropical rainforest ?

(i) It has a big trunk which is used for two purposes—as a nose and for picking up food.

(ii) Its tusk can tear bark of trees. The elephant thus does not face problem as far as availability of food is concerned.

(iii) It has large ears which can hear small sounds. The large ears also help the elephant to remain cool in the hot and humid climate of the rainforest.

2. What is meant by migration of birds, how it is regulated ?

To escape the harsh winter conditions of polar regions birds travel to warmer place in winter. This movement of birds is termed migration. During migration the birds fly high where

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wind flow is helpful and the cold conditions allow them to disperse the heat generated by their flight muscles. How these birds travel to the same place year after year is still a mystery. These birds have built in sense of direction and they know which direction to travel. Many birds are guided by sun during day and by stars during night. Some ornithologists suggest that the birds may use magnetic field of the earth to find the direction.

3. What is the role of sun for controlling the weather ?

All changes in the weather are caused by the sun. The energy sent out by the sun is so huge that it is the source of all heat and light on the earth. Energy absorbed and reflected by the earth surface, oceans and the atmosphere play an important role in determining weather of any particular place.

4. Describe the various adaptations of penguin and their advantages.

(i) Its body is white coloured from the underside and merges well with the white background of snow.

(ii) It has thick skin and a lot of fat to protect it from cold.

(iii) Penguins huddle together. This they do to keep warm.

(iv) Penguins have streamlined body and their feet have webs, which makes them good swimmers.

5. What are the various adaptations of polar bear and their advantages to the bear?

Adaptations of polar bear :

(i) White fur : This blends with the snowy white background. This adaptation protects the polar bear from predators. It also helps in catching the prey.

(ii) The fur has two layers which protects the bear from cold.

(iii) In addition to fur a thick layer of fat present under skin insulates the body from cold.

(iv) It can close its nostrils by doing so it can remain under water for long period.

(v) It has strong sense of smell that helps in locating the prey from a distance.

(vi) Its paws are flat which helps to walk in snow.

(vii) It has small ears that help it to retain as much heat as possible.

6. Given below is a list of climatic conditions and some examples of animals. Read them carefully and place the items in the relevant columns as shown.

Penguin, Gorilla, Monkey, Reindeer, Assam, Greenland, Sun does not rise for six months, Hot and humid climate, Days and nights are almost equal in length throughout the year, Winter temperature around - 37°C, Western Ghats.

Tropical Rain Forest	Polar Region
➢ Hot and Humid Climate	➢ Penguin

[NCERT Exemplar]

Tropical Rain Forest	Polar Region
➢ Hot and Humid Climate	➢ Penguin
➢ Gorilla	➢ Reindeer
➢ Monkey	➢ Greenland
➢ Assam	➢ Sun does not rise for six months
➢ Day and night are almost equal in length throughout the year	➢ Winter temperature around – 37^{0}C
➢ Western Ghats	

II. Long Answer Type Questions.

1. Collect the data of weather forecast report from a newspaper and paste here.

Here is a sample of weather report from a newspaper. Students can collect the report from different newspapers on different days.

DELHI

Today

A nippy morning with shallow fog to start the week. A comfortable day. Possibility of thundery activity in the evening/night. Max. 24°C (−1°C), Min. 13°C (+3°C), Max. R.H. 88%

FOG

Tomorrow

A cool morning with shallow fog. The day to remain comfortable for socializing. A nippy night is likely. Max. 25°C, Min. 12°C.

FOG

Wednesday

The sky is expected to be mainly clear. A warm and sunny day. The night is likely to be cool and misty. High 26°C, low 12°C.

ALMANAC

Today is 19th February 2007, 01 Safar 1428

Falgun Shuklapaksha 02

Samvat 2063

Sunset on Monday 6 : 14 p.m.

Sunrise on Tuesday 6 : 56 a.m.

Moonrise on Monday 07 : 57 p.m.

Moonset on Tuesday 09 : 19 a.m.

FOR THE RECORD :

DELHI : Sunday's temperature max 24.2°C, min 9.3°C. Max R.H. 90%, Min R.H. 32%

INDIA :

Coldest in Plains : Saharanpur, UP, 07°C

Hottest : Punalur, Kerala, 36°C
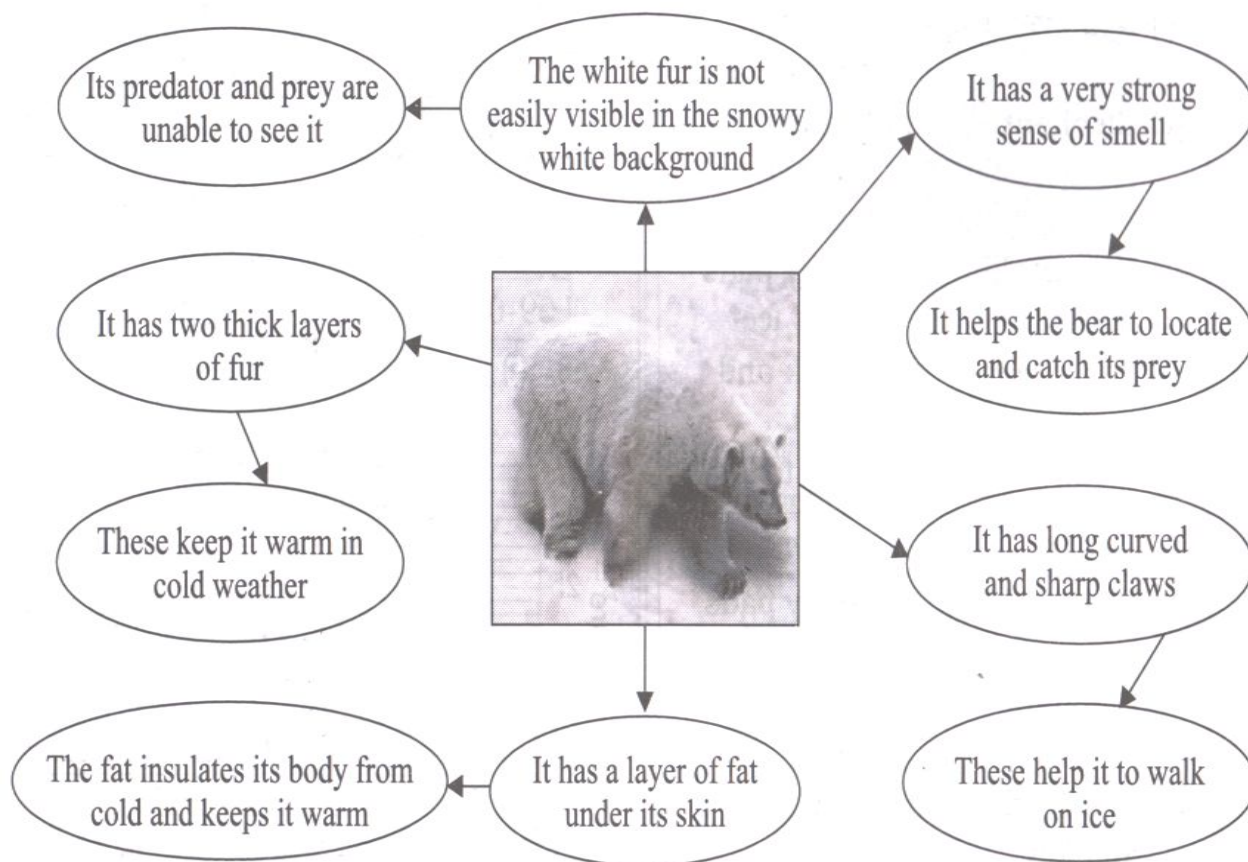
Wettest : Srinagar, J & K

2. **Explain the adaptations of polar bear to live in polar regions.**

➢ Polar bears have white fur so that they are not easily visible in the snowy background.

➢ The fur protects them from their predators.

➢ It also helps them in catching their prey.

➢ They have two thick layers of fur.

➢ These furs protect them from extreme cold.

➢ They also have a layer of fat under their skin. They are so insulated that they have to move slowly and rest often to avoid getting overheated.

➢ Polar bears go for swimming in warm days for cooling. They are good swimmers.

➢ Its paws are wide and large which help it not only to swim well but also walk with ease on snow.

➢ While swimming under water it can close its nostrils and can remain under water for long durations.

➢ It has a strong sense of smell, so that it can catch its prey for food.

3. Show the adaptations of polar bear with the help of a flow chart.

Flow Chart

Its predator and prey are unable to see it

The white fur is not easily visible in the snowy white background

It has a very strong sense of smell

It helps the bear to locate and catch its prey

It has two thick layers of fur

These keep it warm in cold weather

It has long curved and sharp claws

The fat insulates its body from cold and keeps it warm

It has a layer of fat under its skin

These help it to walk on ice

4. What is Beard ape? Write its habits.

The lion talked Macaque is also called Beard ape. It lives in the rainforest of Western Ghats. Its most outstanding feature is the silver white mane, which surrounds the head from the cheeks down to its chin. It is a good climber and spends a major part of its life on the tree. It feeds mainly on fruits. It also eats seeds. This beard ape also searches for insects under the bark of the trees. Since it is able to get sufficient food on the trees, it rarely comes down on ground.

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1. Differentiate between.

     a. weather and climate

     b. Humidity and rainfall

     c. Climates of polar region and tropical rainforest

     d. Maximum and minimum temperatures of the day

     a.

S.No	Weather	Climate
i	It is the day-to-day condition of the atmosphere at a place	It is the average weather condition at a specific place over a longer period of time.
ii	For example, a rainy day describe weather	For example, rainy season describes climate.

     b. Humidity indicates the wetness of a place due to amount of moisture in the atmosphere while rainfall is the drops of water that fall from clouds on the ground.

     c. Polar region remains very cold for most part of the year whereas tropical rainforest is hot and humid.

     d. Maximum and minimum temperatures of the day indicate highest and lowest recorded temperature, respectively.

2.   a. Rainforests offer hospitable climate conditions to support huge population of animals. Explain how.

     b. Explain with examples how animals have adapted themselves to overcome the competition for food and shelter in the rainforests.

     a. Tropical rainforests are located near the equator. This region receives appropriate amount of rainfall throughout the year. It remains frost-free and warm all year log, with temperatures between 70^0 and 85^0F with very little daily fluctuation. Because of continues warmth and rain, this region supports wide variety of plants and animals.

     b. Monkeys, apes, gorillas, lion, tigers, elephants, leopards, lizards, snakes, birds and insects are the animals commonly found in tropical rainforests. To overcome the competition for

food and shelter, some animals are adapted to get food which is not easily reachable. Example, red-eyed frog has developed sticky pads on its feet to helps to climb trees on which it lives . Toucan birds possesses a long large beak which helps it to reach the fruits on branches which are otherwise to weak to support its weight.

3. What can be understood by the term 'migration'? Give an example of a living organism which shows this phenomenon.

The regular seasonal journey undertaken by many species of animals and birds to escape the harsh and cold conditions of weather of a particular place is known as migration. Many animals, birds and fishes migrate to warmer regions in winter and come back when winter is over.   Migration is marked by its annual seasonality. For example, the Siberian crane that comes from Siberia migrates to India at place like Bharatpur in Rajasthan and Sultanpur in Haryana.

I. High Order Thinking Skill (HOTS) Questions.

1. Why is humidity higher in coastal regions?

Coastal areas have high humidity because of the ocean.

2. Why does polar bear close its nostrils during swimming under water?

To avoid entry of water in the body, polar bear close a its nostrils during swimming.

II. High Order Thinking Skill (HOTS) Questions.

1. Why is humidity higher in coastal regions?

Coastal areas have high humidity because of the ocean. The water evaporates from the ocean and is distributed on the close regions by the breeze.

2. Why does polar bear close its nostrils during swimming under water?

The polar bears are not aquatic animals. They are not adapted to stay underwater for long. To avoid entry of water in the body, polar bear closes its nostrils.

1. **Rohit's material aunt lives in western India, i.e., Jodhpur, One summer evening Rohit had a talk to his cousin brother Guddu during which they talked regarding weather also. Though it was summer but Rohit's family enjoyed a better climate at north-east India i.e., Shillong at that time. Guddu told it is extreme hot at Jodhpur and temperature rises upto 45^0C.**

   On this situation answer the following questions:

   i. What is weather and climate?

   ii. Why is there a variation of weather in two opposite parts of India, though climate was summer?

   iii. What are the primary factors that determine the weather changes?

   iv. Was Rohit missing the nice weather at Shillong? Give your own opinion.

   i. Weather : The day to day condition of the atmosphere at a place with respect to the temperature, rainfall etc. is called weather.

   Climate : The average weather pattern taken over a long time is called the climate of the place.

   ii. Weather changes are observed in two different geographical areas as one area, i.e., Rajasthan is hot and dry with minimum rainfall at the same time Shillong situated as North-east part of India receives rain for a major part of the year so temperature does not rise high.

   iii. Energy absorbed from Sun and reflected by earth surface, oceans, mountains, atmosphere.

   iv. Apparently it seems that Rohit is missing the nice climate of Shilong but actually like animals human being also are supposed to adjust in variable climate and weather for their survival. So, Rohit is happy in his own place.

2. **Adaptation helps an organism to survive. Justify.**

   Adaptations help because they help the animal to get food easily or to find shelter and help them get the necessities they need to live.

   Organisms adopt to their new environments to survive and meet the two goals of all animals life: Survive and Reproduce.
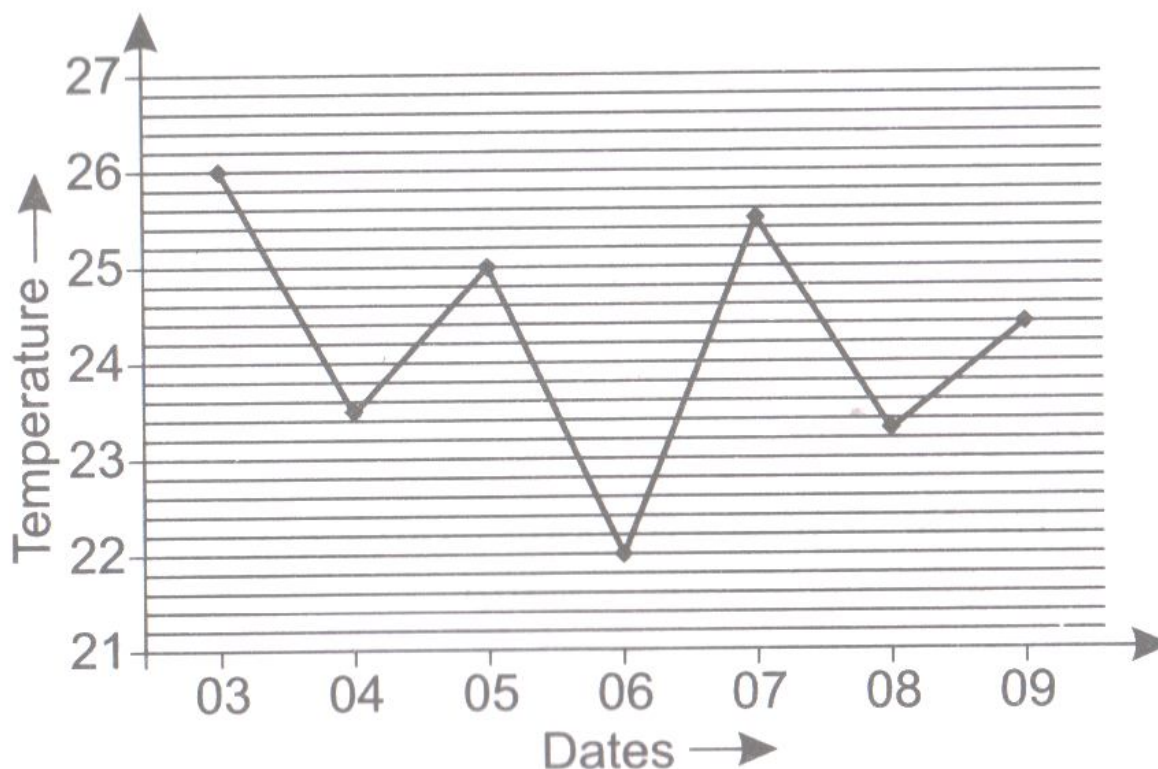
1. You are given a table to show the maximum temperature from 3-8-06 to 9-8-06.

    i. Draw a graph from the data given in the table.

    ii. What do you observe in the graph?

Date	Maximum temperature
03.08.06	26.0^0C
04.08.06	23.5^0C
05.08.06	25.0^0C
06.08.06	22.0^0C
07.08.06	25.5^0C
08.08.06	23.3^0C
09.08.06	24.4^0C

    i.

    ii. The graph shows that the temperature vary day-to-day.

2. Observe the following picture and answer the questions.

   i. Identify the figure.

    ii. What does this figure shows?

iii. What is the need of condition illustrated?

i. The figure is of Penguins.

ii. The figure shows penguins huddling together.

iii. Penguins huddle together to keep themselves warm.

3. Observe the following picture and answer the questions.

i. Identify the figure.

ii. Write the features of the animal.

iii. How do these features help it to live on the trees?
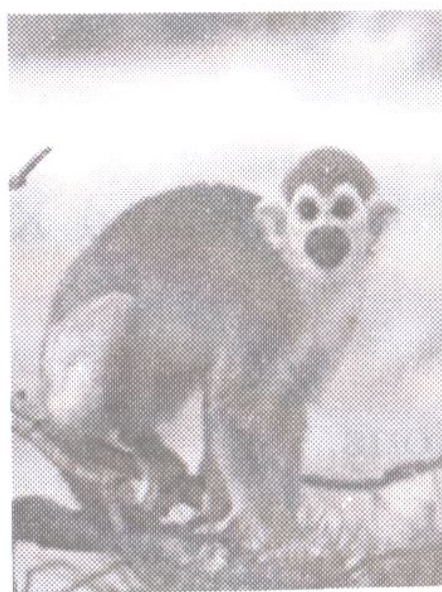
i. It is a new world monkey.

ii. It has long tail, hands and feet.

iii. These feature help the monkey to grasp the branches and to hold on branches.

4. Observe the pictures and write the name of the animals shown in them.

(1)   (2)

1. Toucan   2. Lion-tailed macaque

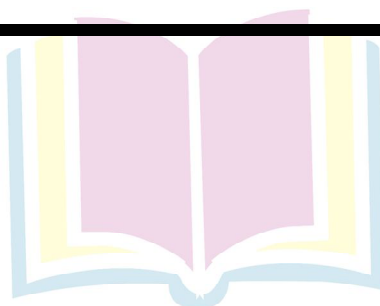**5. Draw a diagram of Indian elephant live in tropical rainforests. Identify**

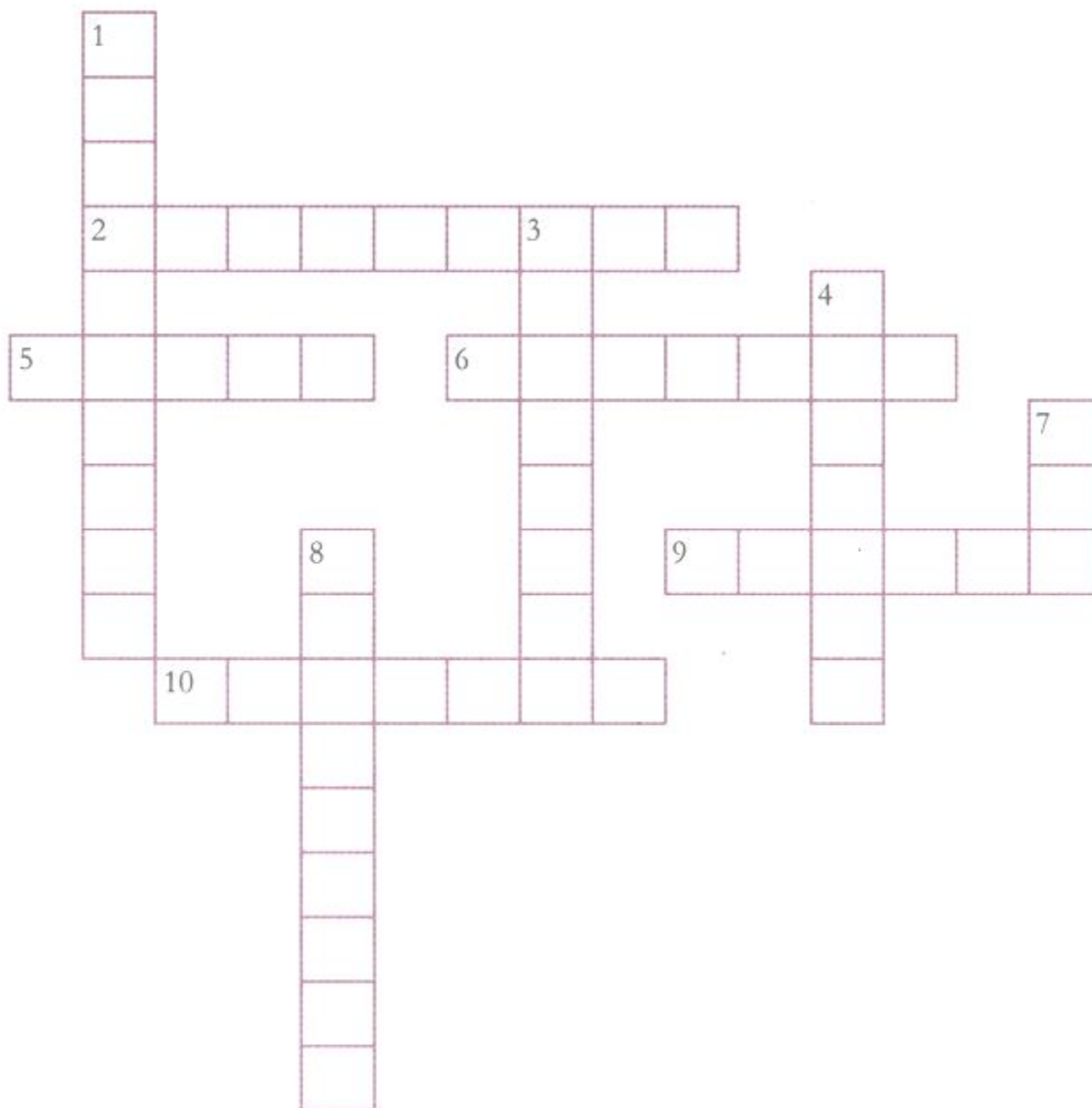   **i. Trunk**   **ii. Tusks**

   i. Trunk   ii. Tusks students identify themselves.

1. Solve the crossword puzzle with the help of the clues given.

Across

2. An animal in the polar region with thick fur on its body

5. An animal that is called the ship of the desert

6. The day-to-day condition of the atmosphere

10. A long term prevalent weather condition

9. A big bird with a long beak, found in the tropical rainforest

Created by Pinkz

Down

1. The ability of an animal to adjust to its surrounds.

3. A well-known animal of the Indian tropical rainforest that keeps moving its ears to keep cool.

4. An animal of the polar region that huddles with other animals like itself to keep warm.

7. This causes all weather changes.

8. An instrument used to measure rainfall.

Across

2. Polar bear

5. Camel

6. Weather

10. Climate

9. toucan

Down

1. Adaptation

3. Elephant

2. Penguin

7. Sun

8. Rain Gauge