



GEOGRAPHY

3

# ATMOSPHERE

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## I. CHOOSE THE CORRECT ANSWER.

1. .... is the most important gas for the survival of living organisms.  
a) Helium      b) Carbon-di-oxide      c) Oxygen      d) Methane      **Ans: c)**
2. The lowest layer of the atmosphere is  
a) Troposphere      b) Stratosphere      c) Exosphere      d) Mesosphere      **Ans: a)**
3. .... reflects radio waves.  
a) Exosphere      b) Ionosphere      c) Mesosphere      d) Stratosphere      **Ans: c)**
4. The average global surface temperature is .....  
a) 12° C      b) 13° C      c) 14° C      d) 15° C      **Ans: b)**
5. The process of change of state of water from gaseous to liquid state is called  
a) Precipitation      b) Evaporation      c) Transpiration      d) Condensation      **Ans: d)**
6. The ..... is the chief energy source of the Earth.  
a) Sun      b) Moon      c) Stars      d) Clouds      **Ans: a)**
7. All types of clouds are found in the .....  
a) Troposphere      b) Ionosphere      c) Mesosphere      d) Exosphere      **Ans: a)**
8. .... clouds are called 'Sheep clouds'.  
a) Alto-cumulus      b) Alto-Stratus      c) Nimbo-stratus      d) Cirro-stratus      **Ans: a)**
9. The Monsoons are .....  
a) Prevailing winds      b) Periodic winds      c) Local winds      d) None of the above      **Ans: d)**
10. Dew in the form of ice crystals is called .....  
a) Frost      b) Fog      c) Mist      d) Sleet      **Ans: a)**
11. .... is called the eye of the storm/cyclone.  
a) Pressure      b) Wind      c) Cyclones      d) Snow      **Ans: c)**
12. The vertical movement of air is called .....  
a) Wind      b) Storm      c) Air current      d) Drift      **Ans: c)**

## ADDITIONAL

13. The blanket of air that surrounds the Earth is called .....  
a) Weathering      b) Atmosphere      c) Biosphere      d) Structure      **Ans: b)**

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14. .... lies beyond the Exosphere.

- a) Stratosphere    b) Troposphere    c) Mesosphere    d) Homosphere

Ans: d)

15. The sun rays fall vertically on the ..... region.

- a) Polar    b) Sub-tropical    c) Equatorial    d) Tropical

Ans: c)

16. Places near the coast experiences ..... climate.

- a) Humid    b) Equable    c) Continental    d) Cold

Ans: b)

17. .... is the instrument used to find the direction of the wind.

- a) Compass    b) Anemometer    c) Wind vane    d) Mercury

Ans: c)

18. The term cyclone is a Greek word meant 'Coil of a .....'.

- a) Snake    b) Rope    c) Thread    d) Wire

Ans: a)

19. Tropical cyclones are known as ..... in Philippines.

- a) Typhoons    b) Hurricanes    c) Baguios    d) Willy willy

Ans: c)

20. .... is the most predominant type of precipitation.

- a) Snow    b) Dew    c) Sleet    d) Rainfall

Ans: d)

21. The ..... pressure belt extends from 5°N and 5°S latitudes.

- a) Equatorial low    b) Subtropical high    c) Sub-polar low    d) polar high

Ans: a)

22. The winds which constantly blow in the same direction throughout the year are called .....

- a) Periodic winds    b) Planetary winds    c) Variable winds    d) Local winds

Ans: b)

23. .... helps in protecting the Earth from harmful ultra violet radiation.

- a) Atmosphere    b) Ozone layer    c) Rain    d) Oxygen

Ans: b)

## II. MATCH THE FOLLOWING.

- |                 |                         |
|-----------------|-------------------------|
| 1. Meteorology  | - a) Wind speed         |
| 2. Climatology  | - b) Direction of wind  |
| 3. Anemometer   | - c) Cirrus             |
| 4. Wind Vane    | - d) Study of climate   |
| 5. Mare's Tail  | - e) Study of weather   |
| 6. Leeward side | - f) Australia          |
| 7. Willy willy  | - g) Rain shadow region |

Ans: 1-e 2-d 3-a 4-b 5-c 6-g 7-f

## ADDITIONAL

- |                |                                 |
|----------------|---------------------------------|
| 1. Torrid zone | - a) Horizontal movement of air |
| 2. Air current | - b) Local wind                 |
| 3. Wind        | - c) Heat zone                  |
| 4. Loo         | - d) chunk of ice               |
| 5. Hails       | - e) Vertical movement of air   |

Ans: 1-c 2-e 3-a 4-b 5-d

- |                        |                                   |
|------------------------|-----------------------------------|
| 6. Alto-cumulus        | - a) Relief rainfall              |
| 7. Orographic rainfall | - b) Measuring unit of wind speed |
| 8. Mawsynram           | - c) Permanent winds              |
| 9. Knot                | - d) Sheep clouds                 |
| 10. Planetary winds    | - e) Wettest place in India       |

**Ans: 6-d 7-a 8-e 9-b 10-c**

### III. ANSWER THE FOLLOWING QUESTIONS BRIEFLY.

#### 1. Define atmosphere.

- The blanket of air that surrounds the Earth is called the Atmosphere. It is held close to the Earth by gravitational attraction.
- Atmosphere is a mixture of gases, water vapour and dust particles in different proportions.
- It is thick near the Earth surface and thins out until it eventually merges with space.

#### 2. Name the different atmospheric layers.

The five atmospheric layers are-

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere and
- Exosphere.

#### 3. Mention the factors that affect the climate?

The factors that affect the climate are –

- |                                  |                      |
|----------------------------------|----------------------|
| • Distance from the equator      | • Mountain barrier   |
| • Altitude                       | • Cloud cover        |
| • Nearness to the sea            | • Ocean currents and |
| • Nature of the prevailing winds | • Natural vegetation |

#### 4. Write short note on Lapse rate.

The temperature decreases at the rate of  $65^{\circ}\text{C}$  per km of height. This is called Normal lapse rate.

#### 5. What are the processes responsible for heating the atmosphere?

The processes that are responsible for atmospheric heat are radiation, conduction, convection and advection.

#### 6. Mention the Planetary wind system of the earth.

- The winds which constantly blow in the same direction throughout the year are called the planetary winds.
- They are also called as permanent winds or the prevailing winds.
- These winds include Trade winds, Westerlies and Polar Easterlies.

**7. Write short note on: a) Trade winds. B) Roaring Forties****a) Trade winds:**

- Trade winds blow from the subtropical high pressure belt on the Equatorial low pressure belt in both the hemispheres.
- They blow with great regularity, fore and in a constant direction throughout the year.
- These winds were very helpful to traders who depended on the winds while sailing in the seas.

**b) Roaring forties:**

- Westerlies are the permanent winds.
- They blow from the tropical high pressure belt to the sub polar low pressure belt in both the hemispheres.
- They blow from South West to North East in the northern hemisphere and North West to South East in the southern hemisphere.
- The velocity of westerlies becomes so vigorous and fast to be called Roaring forties at 40°.

**8. How are clouds formed?**

- A visible mass of condensed water vapour floating in the air above the ground level is called a cloud.
- Large amount of water evaporates each day from the surface of the sea. This is the principal source of atmospheric moisture.
- Cool moisture laden air collect particles like dust, salt content from the sea smoke, etc., and forms cloud.
- Sometimes, mixing of warmer and cooler air also produced clouds.

**9. What are the different types of rainfall?**

Moisture laden air masses raise upwards, forms clouds and bring rainfall. Based on the mechanisms of raising the air, there are three types of rainfall. They are-

- Conventional rainfall
- Frontal or Cyclonic rainfall and
- Orographic rainfall.

**10. What is Precipitation? What are the different forms of precipitation?**

- Falling down of condensed water vapour in different forms is called Precipitation.
- The main forms of precipitation in dude drizzle, rain, sleet, snow, hail etc.

**11. Write short notes on: a) drizzle b) rain c) sleet d) snow e) heat****a) Drizzle:**

Falling of numerous uniform minute droplets of water with diameter of less than 0.5 is called a drizzle.mm. They combined with fog and reduce visibility.



**b) Rain:**

Rain is the most widespread and important form of precipitation in places having temperature above the freezing point. It occurs only when there is abundant moisture in the air.

**c) Sleet:**

Sleet refers to a precipitation in the form of pellets made up of transparent and translucent ice. This precipitation is a mixture of snow and rain.

**d) Snow:**

Snow is formed when condensation occurs below freezing point. It is the precipitation of opaque and semi opaque ice crystals. When these ice crystals collide and stick together, it becomes snowflakes.

**e) Heat:**

- Heat refers to energy that is transferred from a warmer substance or object to a cooler one. Transfer of heat energy is possible only through conduction and radiation.
- As a form of energy, heat has the unit joule (J) in the International System of Units (SI).

**12. How are Cyclones classified?**

- The term cyclone is a Greek work meaning 'Coil of a snake'. Cyclones are centres of low pressure where winds from the surrounding high pressure area converge towards the centre in the spiral form.
- Cyclones can be classified into tropical cyclones, temperate cyclones and extra tropical cyclones.

**ADDITIONAL**

**13. What is insulation?**

The amount of heat received from the sun in the form of short waves is called Insulation or incoming Solar Radiation.

**14. What are isotherms?**

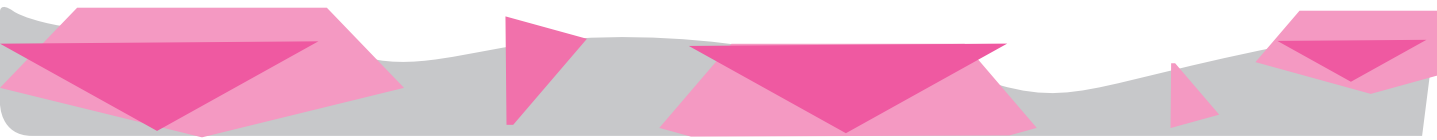
- Temperature varies from place to place, season to season and continent to continent.
- Isotherms are imaginary lines drawn on maps, connecting points and have equal temperatures.

**15. What are the units used to measure the temperature?**

- The atmosphere acts as an insulator and maintains the temperature of the Earth.
- Temperature is a measure of the warmth of an object expressed in terms of Celsius or Fahrenheit.
- It is measured with thermometer.

**16. How is the atmospheric Pressure measured?**

- The atmospheric pressure is the weight exerted by air on a particular area of the Earth surface.
- It is measured with a mercury barometer and the unit of measurement is millibar(mb).



**17. Polar Easterlies are cold and dry. Why it is so?**

- Polar Easterlies blow from the polar high pressure belt to the sub polar low pressure belt.
- These are weak winds blowing from North East direction in the Northern Hemisphere and South East direction in the Southern Hemisphere.
- So, Polar Easterlies are cold and dry.

**18. What are Conduction, Convection and Advection?**

- Conduction is the transfer of heat from hot body to a cold body through contact.
- Convection is transfer of heat by movement or circulation of air in a mass.
- Advection is the transfer of heat through the horizontal movement air.

**19. What is called Horse Latitude?**

- In the olden days, vessels with cargo of horses passing through sub-tropical high pressure belts found difficult in sailing under calm conditions.
- With little water and food left for the humans, sailors used to throw the horses into the sea in order to make the vessels lighter and sail further.
- Henceforth, these belts or latitudes are called as 'Horse latitude'.

**20. What is humidity?**

- The amount of water vapour present in the atmosphere is referred to humidity.
- It affects both weather and climate.
- Humidity of the atmosphere is high when it has large quantities of water vapour.
- The amount of water vapour in the atmosphere is called absolute humidity.

**21. Write about hail storm and its effect.**

- Thunderstorm which is associated with fall of hail stones is known as hailstorm.
- It is one of the most feared weather phenomena.
- It has the potential to destroy plant, trees, crops, animals and human life.

**22. Write about Magnetosphere.**

- Magnetosphere lies beyond the exosphere.
- It is the Earth's magnetic belt where proton and electrons coming out from sun are trapped by the Earth.
- The magnetic field extends to around 64,000 km above the Earth

**IV. GIVE REASONS:****1. Cyclones cause huge loss of life and property.**

- They move in anti clock wise direction in the northern hemisphere, whereas clock wise direction in southern hemisphere.
- Cyclones are formed over the sea (the high pressure area) and moves towards land (the low pressure area).
- They hit the coastal areas strongly. It led to a huge of life and property.

**2. Cloudy days are warmer than cloudless days.**

- Cloud is a mass of small water droplets or ice crystals formed by the condensation of water vapour.
- Clouds are relatively close to the surface of the Earth and act like a blanket to trap the heat of the sun.
- So, cloudy days are warmer than cloudless days.

**3. Fog is dangerous for traffic.**

Fog is dangerous for traffic because

- Bad visibility for drivers in the road.
- Road will be slippery due to wet condition brought by fog.
- Difficult to see in front of you and dangerous to cross the road due to visibility problem from drivers.

**4. Convectional rainfall is also called 4'O clock rain.**

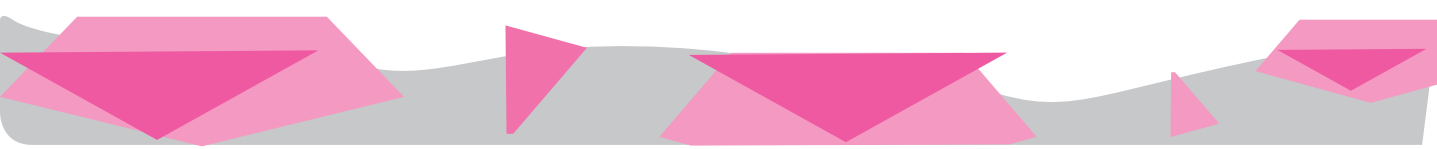
- Continuous heating of the earth in the day causes hot convectional currents.
- On reaching the upper layers of the atmosphere they cool, condense and form cumulonimbus clouds.
- In the late afternoon, the clouds burst into a heavy downpour, often accompanied by thunder and lightning.
- It usually occurs at about 4 pm, so convectional rain is called 'four o'clock rain'.

**5. Polar Easterlies are cold and dry. Why is it so?**

- Polar easterlies are cold and dry polar winds that blow from the polar high pressure belt to the sub polar low pressure belt.
- These winds are intensely freezing and dry, due to its location at such high latitudes. This contributes to the polar climate which is characterized basically by icy winds of high temperature.
- In the mid latitude region, the polar easterlies cold wind meets the warm wind from the Westerlies. This is known as a temperate climate. So, the polar easterlies are cold and dry.

**ADDITIONAL****6. The Equatorial low pressure belt is an area of calm.**

- Due to intense heating, the air gets warm and rises in the equatorial region causing equatorial low pressure belt.
- This belt extends from the equator to about 10°N and S.
- This belt is characterized by extremely low pressure with calm conditions.
- Surface winds are generally absent and thus vertical currents are found.
- This equatorial low pressure belt is an area of calm which is called Doldrum.



**7. The cyclonic winds in the Northern hemisphere move in anti clock wise direction where as they move clock wise direction in the Southern hemisphere.**

Due to the rotation of the Earth, direction of the cyclonic winds change in Northern and Southern hemisphere.

**V. DISTINGUISH BETWEEN THE FOLLOWING:**

**1. Weather and Climate:**

S.No.	Weather	Climate
i	It is the study of atmospheric conditions for a short period over small areas.	It is the study of the average weather condition observed over a long period of time for a larger area.
ii	Weather changes very often – hour to hour and day to day.	Climate is more or less permanent and remains the same.
iii	Study of weather is called Meteorology	Study of climate is called Climatology

**2. Land breeze and sea breeze:**

S.No	Land breeze	Sea breeze
i	The wind that blows from land to sea is known as Land breeze.	The wind that blows from ocean to land is called Sea breeze.
ii	This breeze usually blows in night.	Sea breeze blows in afternoon.
	Cauvery Delta in Tamil Nadu is an Example.	River Narmada and Tapti are examples of Estuary

**3. Windward side and Leeward side:**

S.No	Windward side	Leeward side
i	The wind striking side of the mountain is called windward side.	The other side of the mountain which is sheltered from the wind is called Leeward side.
ii	Windward side receives heavy rainfall.	It receives very less rainfall.
iii	Mumbai and Karnataka coast are in the windward side of the Western Ghats.	Pune and Bangalore are lies in the Leeward side of the Western Ghats.

**4. Tropical cyclone and Temperate cyclones:**

S.No	Tropical cyclone	Temperate cyclone
i	Tropical cyclones develop in the Inter Tropical convergence zone.	Temperate cyclones are formed in mid latitudes region between 35° and 65°N and S.



ii	They are formed due to the differential heating of land and sea.	This cyclone is formed when hot and cold air masses meet together.
iii	Tropical cyclones become weak after reaching the landmasses.	These cyclones do not become weak like Tropical cyclones on reaching the land.

### ADDITIONAL

#### 5. Troposphere and Mesosphere.

S.No	Troposphere	Mesosphere
i.	It is the lowest layer of the atmosphere	It is the third layer of the atmosphere.
ii.	The layer extends up to 8 km at the poles and up to 18 km at the Equator.	This layer extends between 50 km and 80 km.
iii.	Here, the temperature decreases with increasing height.	In this layer, the temperature increases with increasing height.
iv.	The upper limit of the troposphere is called as tropopause.	The upper limit of the stratosphere is called as stratopause.

#### 6. Insulation and temperature:

S.No	Insulation	Temperature
i	The amount of heat received from the sun is called Insulation.	Temperature is a measure of the warmth of an object.
ii	The atmosphere acts as an insulator and maintains the temperature of the Earth.	Temperature is a physical quantity expressing hot and cold. Temperature is measured with a thermometer

### VI. PARAGRAPH QUESTIONS.

#### 1. Write a paragraph about the structure of the atmosphere.

The structure of the atmosphere is-

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere and
- Exosphere

#### Troposphere:

- The lowest layer of the atmosphere is the troposphere. The layer extends up to a 8 km to 18 km at the Equator.
- In this layer, the temperature decreases with increasing height. This layer is also known as Weather making layer.

**Stratosphere:**

- Stratosphere lies above the troposphere. It extends to a height of about 50 km above earth.
- The temperature increases with increase in height in this layer. This layer is also called as Ozonosphere.

**Mesosphere:**

- It is the third layer of the atmosphere. It extends 50 km and 80 km.
- Radio waves transmitted from earth are reflected back to earth from this layer.
- In this layer also the temperature increases with increasing height.
- Most of the meteors nearing the earth get burned in this layer.

**Thermosphere:**

- Thermosphere exists above the Mesosphere. It extends to about 600 km.
- Here, the temperature increases with increasing height.
- The upper portion of the Thermosphere is referred as 'Hetrosphere' and the lower portion is known as 'Homosphere'.

**Exosphere:**

- The uppermost layer of the atmosphere is called exosphere.
- This layer is extremely rarefied with gases and gradually merges with the outer space.

**2. Explain the different types of Permanent winds.**

Winds are generally classified into four types.

**Planetary winds:**

- The winds which constantly blow in the same direction throughout the year are called the Planetary Winds.
- They are also called as Permanent Winds of the Prevailing Winds.
- These winds include Trade winds, Westerlies and Polar Easterlies.

**Trade Winds:**

- Trade winds blow from the subtropical high pressure belt to the Equatorial low pressure belt in both the hemispheres.
- They blow with great regularity, force and in a constant direction throughout the year.
- These winds are very helpful to the traders who sail in the sea.

**Westerlies:**

- Westerlies blow from the tropical high pressure belt to the sub polar low pressure belt in both the hemispheres.
- They blow from South-west to North-east in the northern hemisphere and North-west to South-east in the southern hemisphere.



- The velocity of westerlies become to vigorous and fast to be called Roaring Forties at 40°, Furious fifties at 50° and screaming sixties at 60° latitudes.

### Polar Easterlies:

- Polar easterlies are cold and dry polar winds that blow from the polar high pressure belt to the sub polar low pressure belt.
- These are weak winds blowing from North-east direction in the Northern Hemisphere and South-east direction in the Southern Hemisphere.

### 3. How are clouds classified? Explain them..

According to their height, clouds are classified into three types such as-

- High clouds (6 – 20 km height)
- Middle clouds (2.5 km – 6km height)
- Low clouds (Ground surface to 2.5 km height)

### High Clouds:

High clouds are further classified into Cirrus clouds, Cirro-cumulus and Cirro-stratus.

- Cirrus** : Detached clouds formed at the high sky (8000 meters to 12,000meters).  
These clouds are dry and do not give rainfall
- Cirro-cumulus** : White patched, sheet or layer like clouds composed of ice crystals.
- Cirro-stratus** : Smooth milky transparent whitish clouds composed of tiny ice crystals.

### Middle clouds:

Middle clouds are three types. They are i) Alto-stratus ii) Alto-cumulus and iii) Nimbo stratus.

- Alto-stratus** : Thin sheets of grey or blue coloured clouds in uniform appearance consisting of frozen water droplets.
- Alto-cumulus** : Clouds fitted closely together in parallel bands called as 'Sheep clouds' or 'Wool pack clouds'.
- Nimbus stratus** : These are clouds of dark colour very close to the ground surface associated with rain, snow or sleet.

### Low clouds:

Four types of Low clouds are i) Strato-cumulus ii) Stratus iii) Cumulus and iv) Cumulo-nimbus.

- Strato-cumulus** : Grey of whitish layer of non-fibrous low clouds found in rounded patches at an height of 2,500 to 3000 metres associated with fair or clear weather.
- Stratus** : Dense, low lying fog like clouds associated with rain or snow.
- Cumulus** : Dome-shaped with a flat base resembling a cauliflower, associated with fair weather.
- Cumulo-nimbus** : Fluffy thick lowering thunderstorm cloud capable of producing heavy rain, snow, hailstorm or tornadoes.

#### 4. How are cyclones formed? How are they classified?

- The term cyclone is a Greek word meaning 'Coil of a snake'. Cyclones are centres of low pressure where winds from the surrounding high pressure area converge towards the centre in the spiral form.
- Due to the rotation of the earth, the cyclonic winds in the northern hemisphere move in anti clock wise direction and clockwise direction in the southern hemisphere.
- Cyclones can be classified into-
  - i. Tropical cyclones
  - ii. Temperate cyclones and
  - iii. Extra tropical cyclones.

##### i. Tropical cyclones:

- Tropical cyclones develop in the Inter tropical convergence zone. They are formed due to the differential heating of land and sea.
- Tropical cyclones often cause heavy loss of life and property on the coasts and become weak after reaching the landmasses.
- They are known as 'cyclones' in Indian ocean, 'typhoons' in the western pacific ocean, 'hurricanes' in the Atlantic and 'willy willy' in Australia.

##### ii. Temperate cyclones:

- Temperate cyclones are formed where hot and cold air masses meet in mid-latitudes between 35° and 65° N and S.
- The temperature cyclones do not become weak like the tropical cyclones on reaching the land.
- Temperate cyclone commonly occurs over the North Atlantic ocean, North west Europe and Mediterranean basin.
- In India, it is called as 'Western disturbances'

##### iii. Extra tropical cyclones:

- Extra tropical cyclones occur in the latitudes between 30° and 60° in both the hemispheres.
- They also called as mid-latitude cyclones.
- They collect energy from temperature differences which are found in higher latitudes.
- Extra tropical cyclones produce mild showers to heavy gales, thunderstorms, blizzards and tornadoes.

#### 5. Explain the different forms of precipitation.

Falling down of condensed water vapour in different forms is called Precipitation. The main forms of precipitation include-

- |           |        |
|-----------|--------|
| • Drizzle | • Snow |
| • Rain    | • Hail |
| • Sleet   |        |



### Drizzle

- is a fall of numerous uniform minute droplets of water with diameter of less than 0.5mm. They combined with fog and reduce visibility.
- **Rain** is the most widespread and important form of precipitation in places having temperature above the freezing point. It occurs only when there is abundant moisture in the air
- **Sleet** refers to a precipitation in the form of pellets made up of transparent and translucent ice. This precipitation is a mixture of snow and rain.
- **Snow** is formed when condensation occurs below freezing point
- **Hails** are chunks of ice (greater than 2cm in diameter) falling from the sky during a rain storm or thunder storm.
- **Hailstones** are a form of solid precipitation where small pieces of ice fall downwards.

### VII. ACTIVITY:

#### 1. Preparing chart of clouds at various atmospheric layers.

##### High clouds:

These clouds are formed at the high sky (between 8000 meters and 12,000 meters). Three types of the high clouds are i) Cirrus ii) Cirro-cumulus and iii) Cirro-stratus



i) Cirrus cloud



ii) Cirro-cumulus



iii) Cirro-stratus

##### Middle clouds:

Middle clouds are three types. They are i) Alto-stratus ii) Alto-cumulus and iii) Nimbo stratus.



i) Alto-stratus



ii) Alto-cumulus



iii) Nimbo stratus

##### Low clouds:

These clouds are classified into four. They are i) Strato-cumulus ii) Stratus iii) Cumulus and iv) Cumulo-nimbus



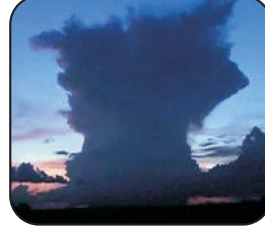
i) Strato-cumulus



ii) Stratus



iii) Cumulus



iv) Cumulus-nimbus

## 2. Collecting Proverbs - Clouds and rain related Proverbs

### i) Cloud related proverbs:

- Thunder in the morning, all day storming.
- Thunder at night is the travellers delight
- Evening red and morning gray will set the traveller on his way.
- Chimney smoke descends, our nice weather ends.
- When clouds look like black smoke a wise man will put on his cloak.
- The more cloud types present, the greater the chance of rain or snow.
- When clouds appear like rocks and towers, Earth is refreshed by frequent showers.
- Evening gray and morning red will bring down rain upon his head
- Red sky in morning, sailor takes warning.

### ii) Rain related proverbs:

- No dew on the grass at night is a sign of rain
- A pale rising moon portends rain the next day.
- Look for rain when the crow flies low
- When cats wash behind their ears, it means rain
- It is said that flies bite more when it is going to rain
- A ring around the sun or moon means rain or snow coming soon.
- When leaves show their undersides, be very sure that rain betides.
- If ants move their eggs and climb, rain is coming anytime.
- If salt is sticky and gains in weight, it will rain before too late.
- Flowers are more fragrant before rain





## 2. Poem on 'clouds', 'rain':

### i) Poem on Clouds:

#### THE CLOUD

I BRING fresh showers for the thirsting flowers,  
From the seas and the streams;  
I bear light shade for the leaves when laid  
In their noonday dreams.  
From my wings are shaken the dews that waken  
The sweet buds every one,  
When rocked to rest on their mother's breast,  
As she dances about the sun.  
I wield the flail of the lashing hail,  
And whiten the green plains under,



### ii) Poem on Rain



#### Rain Drops

I am rain.  
I like to soar through the air  
and make everything wet.  
I fall out of clouds.  
I hose the Earth and announce Winter.  
I always come on dark lonely days.  
I sometimes interrupt baseball games.  
I feel important when I water flowers  
and keep everything alive.  
I am rain.



## 4. Report writing - Observe the clouds for a week. Write your report about the shape and colours of clouds.

(Self Activity)

## 5. Working models - a) Rain Gauge b) Wind vane

### A) RAIN GAUGE:

#### Needed things:

A plastic (soft drink) bottle, Some stones or pebbles, Tape, Marker (felt pen) and A ruler

**Instructions:**

- Cut the top off the bottle.
- Place some stones in the bottom of the bottle. Turn the top upside down and tape it to the bottle.
- Use a ruler and marker pen to make a scale on the bottle.
- Pour water into the bottle until it reaches the bottom strip on the scale. Congratulations, you have finished your rain gauge.
- Put your rain gauge outside where it can collect water when it starts raining. After a rain shower has finished, check to see how far up the scale the water has risen.

**Usage:**

Rain falls into the top of the gauge and collects at the bottom where it can be easily measured. From this, we prepare a chart on rainfall of a region for week or a month.

**B) WIND VANE:****Needed things:**

Cardstock, Scissors, Metric, Pin, Modelling clay, Paper Plate and Marker.

**Instructions:**

- Cut out the shape of an arrow from a sheet of cardstock. The arrow must be 5cm in length. Then cut out the tail of the arrow. The tail must be 7cm in length. Use a metric ruler to get the measurements exact.
- Cut a slit in both ends of your straw. Slide your arrow head in one end, and your arrow tail in the other. If you are afraid they won't stay, you can add a little glue.
- Hold a pencil so that its point is facing down. Place the straw over the eraser part of the pencil. Make sure the middle of the straw is over the eraser and then press a push pin down through the straw and into the eraser. Make sure there is a little gap in between the straw and the eraser so that the straw can spin easily.
- Build a mound out of some modelling clay. Stick the point of the pencil down into the centre of the mound. Go far enough that the homemade wind vane won't blow over.
- Place your homemade wind vane on a paper plate. Label each side of the paper plate with a marker. You should have north, south, east, and west in their respective places.
- Take the wind vane outside and note which direction the wind is blowing.

**6. Preparing bar diagram.**

- Collect the data of temperature of Kanyakumari, Delhi, Allahabad and Itanagar for a day.
- Collect the data of rainfall received by Jaisalmer (Rajasthan), Mawsynram (Meghalaya), Nagapattinam, Coimbatore for a day.

(Self Activity)

**7. Become a budding Meteorologist: Record the local weather condition of your place for a week.**

(Self Activity)

