

Chapter: 3

Q.1 Choose the right option and rewrite the sentence

5

- 1 The amount of vapour is 1 cu.m. of air, shows the
- cumulonimbus
 - relative humidity
 - absolute humidity
 - condensation
 - vapour - holding capacity

Ans The amount of vapour is 1 cu.m. of air, shows the **absolute humidity**.

- 2 In a free environment, the of the vapour present in the atmosphere takes place around the dust particles.
- cumulonimbus
 - relative humidity
 - absolute humidity
 - condensation
 - vapour-holding capacity

Ans In a free environment, the **condensation** of the vapour present in the atmosphere takes place around the dust particles.

- 3 As is less in the desert areas the air is dry there.
- cumulonimbus
 - relative humidity
 - absolute humidity
 - condensation
 - vapour - holding capacity

Ans As **relative humidity** is less in the desert areas the air is dry there.

- 4 The of air is dependent on the Temperature of the air.
- cumulonimbus
 - relative humidity
 - absolute humidity
 - condensation
 - vapour - holding capacity

Ans The **vapour holding capacity** of air is dependent on the Temperature of the air.

- 5 types of clouds are indicator of a storm.
- Cumulonimbus
 - Relative humidity
 - Absolute humidity
 - Condensation
 - Vapour - holding capacity

Ans **Cumulonimbus** types of clouds are indicator of a storm.

Q.2 Match the Correct Pairs

4

1

Group - A	Group - B	Group - C
A) Cirrus	i) Vertical extent in the sky	a) Roaring clouds
B) Cumulonimbus	ii) Higher altitude	b) Floating clouds
C) Nimbostratus	iii) Medium altitude	c) Continuous rainfall
D) Alto-cumulus	iv) Low altitude	d) Snow flake clouds

Ans

Group-A	Group-B	Group-C
A) Cirrus	Higher altitude	Snow flake clouds
B) Cumulonimbus	Vertical extent in the sky	Roaring clouds

C) Nimbostratus	Low attitude	Continuous rainfall
D) Alto-cumulus	Medium altitude	Floating clouds

Q.3 Answer in one sentence

7

1 How is humidity measured ?

Ans Absolute = $\frac{\text{Mass of water vapour}}{\text{Volume of air}}$
 Relative humidity (%) = $\frac{\text{Absolute humidity}}{\text{Vapour holding capacity}} \times 100$

2 On what does the percentage of relative humidity depend ?

Ans The percentage of relative humidity depends on the absolute humidity and vapour holding capacity of the air.

3 What is a cloud ?

Ans The condensed water or fine particles of snow accumulated around dust particles at high attitude leading for the formation of cloud.

4 What are the pre-requisite for condensation ?

Ans Low Temperature and high relative humidity are the pre-requisites for condensation.

5 What are the different types of clouds ?

Ans Clouds are basically of three types.

- High clouds
- Medium clouds
- Low clouds

6 Which type of clouds give rain ?

Ans Nimbo – stratus and cumulonimbus type of clouds give rain.

7 Why is the air in a region dry ?

Ans Due to low amount or no moisture in the air makes it dry.

Q.4 Differentiate the following

6

1 Relative Humidity & Absolute Humidity

Relative Humidity	Absolute Humidity
i. The amount of water vapour needed for saturation at the same Temperature.	i. The amount of water in 1 cu.m of air is called the absolute humidity.
ii. Relative humidity is measured as $\text{Relative humidity} = \frac{\text{Absolute humidity}}{\text{Vapour holding capacity}} \times 100$	ii. Absolute humidity is measured as $\text{Absolute humidity} = \frac{\text{Mass of water vapour}}{\text{Volume of air}}$

2 Humidity and Clouds.

Humidity	Clouds
i. The amount of water vapour present in the air is called humidity.	i. A mass of fine particles of ice and water accumulated around the dust particles in the air at high altitude is called cloud.
ii. Humidity takes place due to evaporation of water.	ii. Clouds are formed due to condensation of water vapour.
iii. Humidity is invisible	iii. Clouds are visible
iv. Humidity leads to the formation of clouds.	iv. Clouds lead to rainfall.

3 Cumulus clouds and Cumulonimbus clouds.

Ans	Cumulus clouds	Cumulonimbus clouds
	i. The clouds that are formed from 500 m to 6000 meters altitude having comparative by less vertical expanse are called cumulus clouds	i. The clouds that are formed from 500 m to 6000 meters altitude having more vertical expanse are called cumulonimbus clouds.
	ii. These clouds are huge and dome shaped	ii. These clouds look like huge mountains.
	iii. They are grey in colour	iii. They are dense and dark
	iv. They are the indicator of pleasant weather.	iv. They accompanied by thundering and lightening

Q.5 Give Geographical Reasons

8

1 Cumulus clouds change into cumulonimbus clouds.

Ans i. Cumulus clouds are found between 500 m to 6000 m altitude. They are mostly formed due to the vertical flow of the air.
 ii. Sometimes, the vertical expanse of the cumulus clouds increases and it leads to formation of huge mountain-like cumulonimbus clouds. Thus, cumulus clouds change into cumulonimbus clouds.

2 Air becomes saturated.

Ans i. At certain temperature, the moisture-holding capacity of air gets fulfilled and it becomes equal to the proportion of the moisture present in it.
 ii. At this state, no more moisture can be absorbed by the air. Thus, air becomes saturated.

3 Clouds float in the sky.

Ans i. Find particles of ice and water float in the air at a greater height, they accumulate around particles in the air and became larger in size due to condensation.
 ii. Because of the vertical flow of the wind, the clouds float in the atmosphere.
 iii. Like a kite which floats in the air as it moves higher and higher, the clouds too float in the atmosphere of the vertical flow.

4 The proportion of relative humidity changes according to attitude.

Ans i. Generally, relative humidity changes, it is more in the mornings and nights but it is less during the afternoon because the Temperature increases. The moisture holding capacity of the air increases.
 ii. As the air rises up at greater attitude the Temperature decreases and the relative humidity / also decreases because the moisture holding capacity of the air is less. So proportion of relative humidity changes because of the Temperature keeps decreasing. Air becomes saturated.
 iii. The humidity of the air depends on Temperature.
 iv. The moisture level in the air more when Temperature is low but less when Temperature is high.
 v. When moisture holding capacity of air becomes equal to the proportion of moisture present in it. The air is saturated.
 vi. Cumulus clouds change into cumulonimbus clouds.
 vii. Cumulus clouds are found between 500 m to 6000 m altitude. They are mostly formed due to the vertical flow of the air.
 viii. The vertical expanse of these clouds increases so much that they form huge maintain like shape and they turn into cumulonimbus clouds.

Q.6 Answer in detail/ brief

8

1 When the temperature of the air is 30°C, its vapour holding capacity is 30.37 gms/cu.m. If absolute humidity is 18.8 gm/cu.m then would be the relative humidity

Ans Relative humidity (%) = $\frac{\text{Absolute humidity}}{\text{Vapour holding capacity}} \times 100$
 $= \frac{18.00}{30.37} \times 100$
 Ans. = 59.26%

2 What would be the absolute humidity of the air if 1 cu.m. air contain 4.08 gm. of vapour at 0°C Temperature ?

Ans Absolute humidity = $\frac{\text{Mass of water vapour}}{\text{Volume of air}}$

$$= \frac{4.08}{1}$$

Ans. = 4.08 gm / m³

