2 Understanding the Weather

Section A: Fill in the blanks (1 mark each).

1. The _____ is the layer of the atmosphere where all weather phenomena occur.
2. _____ croaking loudly can be a sign that rain is coming.
3. Rain gauge is used to measure _____.
4. Atmospheric pressure is measured using a device called a _____.
5. The movement of air is called _____.
6. A hygrometer is used to measure _____.

Section B: Match the following (1 mark each).

A	B	Ans.
a. Our body	i. Sign of approaching rain	a. _____
b. About 6 kilometers	ii. Normal atmospheric pressure at sea level	b. _____
c. Ants moving their eggs	iii. Sensing the weather	c. _____
d. 1013 millibars	iv. Organization that issues weather warnings	d. _____
e. India Meteorological Department	v. Thickness of troposphere at poles	e. _____

Section C: Choose the correct option and tick (✓) the right answer (1 mark each).

1. Which layer of the atmosphere is responsible for weather changes?
   a. Stratosphere ☐ b. Troposphere ☐
   c. Mesosphere ☐ d. Exosphere ☐
2. Which instrument measures air pressure?
   a. Thermometer ☐ b. Rain gauge ☐
   c. Anemometer ☐ d. Barometer ☐
3. Which of the following measures humidity?
   a. Hygrometer ☐ b. Barometer ☐
   c. Wind vane ☐ d. Rain gauge ☐
4. What is the unit of measurement for rainfall in a rain gauge?
   a. Kilometers ☐ b. Degrees ☐
   c. Millimeters ☐ d. Millibars ☐

5. The movement of air from high-pressure to low-pressure areas is called:
   a. Rainfall ☐ b. Wind ☐
   c. Humidity ☐ d. Storm ☐
6. What is the normal atmospheric pressure at sea level?
   a. 1000 mb ☐ b. 1013 mb ☐
   c. 1025 mb ☐ d. 990 mb ☐
7. What is the relative humidity when the air is saturated with water vapour?
   a. 0% ☐ b. 20% ☐
   c. 50% ☐ c. 100% ☐
8. What does a rain gauge measure?
   a. Wind speed ☐ b. Temperature ☐
   c. Rainfall ☐ d. Sunshine ☐
9. Which city is likely to have higher humidity?
   a. Jaipur ☐ b. Delhi ☐
   c. Kochi ☐ d. Shimla ☐
10. The India Meteorological Department was established in:
   a. 1947 ☐ b. 1875 ☐
   c. 1991 ☐ d. 2020 ☐

Section D: Write T for True and F for False in the box (1 mark each).

1. The troposphere is the layer where most weather changes happen. ☐
2. Wind always moves from low-pressure areas to high-pressure areas. ☐
3. High humidity means that clothes will dry quickly. ☐
4. Atmospheric pressure is higher at sea level than at the top of a mountain. ☐
5. Automated Weather Stations require constant human observation. ☐
6. People in ancient times predicted the weather by observing nature. ☐
7. Humidity is higher in coastal areas than in deserts. ☐
8. A depression indicates low atmospheric pressure. ☐
9. Digital thermometers are more precise than traditional liquid thermometers. ☐
10. Weather forecasting is important for agriculture, aviation, and disaster management. ☐

Section E: Very Short Answer (1–2 sentences, 2 marks each).

1. Define weather and name two elements used to describe it.

   Ans. _____

   _____

2. What is the troposphere and why is it important?

   Ans. _____

   _____

3. What does 84% humidity mean?

   Ans. _____

   _____

4. What is the function of a rain gauge?

   Ans. _____

   _____

5. What is atmospheric pressure?

   Ans. _____

   _____

6. What does a wind vane show?

   Ans. _____

   _____

7. Name two traditional signs people use to predict rain.

   Ans. _____

   _____

8. What causes breathlessness at high altitudes?

   Ans. _____

   _____

9. How does temperature affect the capacity of air to hold water vapour?

   Ans. _____

   _____

10. What is the purpose of an Automated Weather Station (AWS)?

    Ans. _____

    _____

Section D: Application-Based Questions (3 marks each).

1. You are planning a school picnic. The forecast says 34°C with 80% humidity. What precautions should you take?

_____

_____

_____

_____

_____

2. Why do people feel breathless in high-altitude areas like Ladakh?

_____

_____

_____

_____

_____

3. Explain how a rain gauge works in your own words.

_____

_____

_____

_____

_____

Section E: Data Analysis (4 marks).

Use the following data to answer the questions:

Date	Max Temp (°C)	Min Temp (°C)
01 June	36	27
02 June	38	26
03 June	37	25

1. What is the highest temperature recorded in these three days?

_____

2. What is the lowest minimum temperature?

_____

3. Calculate the range of temperatures on 02 June.

_____

4. Calculate the mean temperature on 03 June.

_____

Section F: Long Answer Questions (80–120 words).

1. Describe the five main elements of weather and how each is measured.

   Ans. _____

   _____

   _____

   _____

   _____

2. Describe how an anemometer works and what it measures.

   Ans. _____

   _____

   _____

   _____

   _____

3. How does atmospheric pressure change with altitude, and what are its effects on the human body?

   Ans. _____

   _____

   _____

   _____

   _____

4. Explain the role of weather stations and how Automated Weather Stations (AWS) enhance weather monitoring, with examples.

   Ans. _____

   _____

   _____

   _____

   _____

5. Do scientists just look up at the sky and predict about the weather. If no, then justify the statement.

   Ans. _____

   _____

   _____

   _____

6. Discuss the importance of weather predictions and the role of the India Meteorological Department (IMD) in India.

   Ans. _____

   _____

   _____

   _____

Section G: One Word Answer

1. Small, hard balls of ice that fall from the sky like rain. :- _____
2. What is the study of weather called? :- _____
3. Which gas forms most of our atmosphere? :- _____
4. Name the weather station uses sensors without human help. :- _____
5. Name the scientific body responsible for weather forecasting in India. :- _____

Answer

Section A: Fill in the blanks

1. Troposphere
2. Frogs
3. Rainfall
4. Barometer
5. Wind
6. Humidity

Section B: Match the following

1. a – iii 2. b – v 3. c – i 4. d – ii 5. e – iv

Section C: MCQs

1. b) Troposphere 2. d) Barometer 3. a) Hygrometer 4. c) Millimeters 5. b) Wind 6. b) 1013 mb 7. d) 100% 8. c) Rainfall 9. c) Kochi 10. b) 1875

Section D: True or False

1. True 2. False 3. False 4. True 5. False 6. True 7. True 8. True 9. True 10. True

Section E: Very Short Answer

1. Weather is the condition of the atmosphere at a given time and place.
   Two elements: temperature and rainfall.
2. The troposphere is the lowest layer of the atmosphere.
   It is important as all weather changes occur here.
3. 84% humidity means the air holds 84% of the maximum water vapour it can hold at that temperature.
4. A rain gauge collects and measures the amount of rainfall in a specific area.
5. Atmospheric pressure is the weight of the air pressing down on the Earth's surface.
6. A wind vane shows the direction from which the wind is blowing.
7. Frogs croaking and ants moving eggs are traditional signs.
8. At high altitudes, air pressure and oxygen levels are lower, which causes breathlessness.
9. Warm air can hold more water vapour, so higher temperatures increase humidity.
10. AWS automatically records weather data without human help for accurate monitoring.

Section F: Application-Based

1. Precautions for a picnic:
   - Wear light cotton clothes.
   - Stay hydrated.
   - Carry caps or umbrellas.
   - Avoid outdoor games in the afternoon.
   - Carry ORS or lemon water.
2. Breathlessness in Ladakh:
   - High altitude = Low air pressure = Less oxygen.
   - Body needs time to adjust.
   - Less oxygen causes dizziness, fatigue.
3. How a rain gauge works:
   - It collects rain through a funnel.
   - Water gathers in a container with a scale.
   - Height of water indicates rainfall in mm.

Section G: Data Analysis

1. Highest temperature: 38°C (02 June)
2. Lowest minimum temperature: 25°C (03 June)

3. Range on 02 June: 38 - 26 = 12°C
4. Mean temperature on 03 June: (37 + 25) ÷ 2 = 31°C

Section H: Long Answer (Sample summaries)

1. Five elements of weather:
- Temperature – measured by a thermometer
- Precipitation – measured by a rain gauge
- Humidity – measured by a hygrometer
- Wind – measured by anemometer/wind vane
- Atmospheric pressure – measured by barometer

2. Anemometer:
- Measures wind speed
- Cups rotate as wind blows
- Faster wind = faster spin
- Speed measured in km/h

3. Atmospheric pressure and altitude:
- Pressure decreases with height
- Less oxygen → breathlessness
- Important for mountaineers, pilots, soldiers

4. Weather stations & AWS:
- Weather stations collect data using instruments
- AWS uses sensors for automated readings
- Example: AWS in Sikkim monitors glacial conditions

5. Do scientists just look at the sky?
- No, they use scientific instruments and models
- Collect data using thermometers, barometers, satellites
- Analyse patterns for accurate forecasts

6. Importance of IMD:
- Issues weather warnings
- Helps agriculture, disaster planning, air/sea safety
- Prevents loss of life by giving early alerts

Section I: One Word Answer

1. Hail
2. Meteorology
3. Nitrogen
4. AWS / Automated Weather Station
5. India Meteorological Department