Chapter 2: Understanding the Weather

Questions — Questions and Activities

Q1 Match the instrument with the weather element it measures.

Instrument: (1) Hygrometer, (2) Anemometer, (3) Barometer, (4) Thermometer, (5) Rain gauge

Element: (a) Precipitation, (b) Atmospheric pressure, (c) Wind direction and speed, (d) Humidity, (e) Temperature

SOLUTION

Each instrument is designed to measure one specific element of weather:

(1) Hygrometer → (d) Humidity
The hygrometer measures the amount of water vapour present in the air, expressed as relative humidity (%).

(2) Anemometer → (c) Wind direction and speed
The anemometer has rotating cups that spin when the wind blows; the faster the spin, the greater the wind speed. It measures speed in km/h and also indicates wind direction.

(3) Barometer → (b) Atmospheric pressure
The barometer measures the pressure exerted by the weight of air above and around us, displayed in millibars (mb). Normal sea-level pressure is about 1013 mb.

(4) Thermometer → (e) Temperature
The thermometer measures how hot or cold the atmosphere is, in degrees Celsius (°C) or Fahrenheit (°F).

(5) Rain gauge → (a) Precipitation
The rain gauge collects rainwater in a funnel and cylinder and measures the depth of water collected in millimetres (mm).

Answer: (1)–(d), (2)–(c), (3)–(b), (4)–(e), (5)–(a)

Q2 Jyotsna is deciding what clothes to pack for her school trip to Mumbai in June. She looks at the weather forecast, which predicts 29°C and 84% humidity. What would be your advice to her?

SOLUTION

The forecast of 29°C and 84% humidity tells us two things:

1. 29°C is a warm temperature. It is not extreme, but combined with high humidity it will feel much hotter.

2. 84% relative humidity is in the 'humid weather' range (60–80% and above). At such high humidity, water evaporates slowly from the skin, so sweat does not cool the body efficiently. This makes the weather feel hot and sticky.

3. June is the onset of the monsoon season in Mumbai. Rain is very likely alongside the heat and humidity.

Advice to Jyotsna:
- Pack light, loose-fitting clothes made of breathable fabrics (such as cotton) that absorb sweat and allow air circulation.
- Avoid synthetic or thick fabrics, which trap heat and moisture.
- Carry a light raincoat or umbrella and waterproof footwear, since monsoon rains in Mumbai can be heavy.
- Stay hydrated, as the combination of heat and humidity causes the body to lose water quickly.

Answer: Pack light, breathable cotton clothes; carry a raincoat and umbrella. The 84% humidity will make 29°C feel hotter and stickier, and June in Mumbai brings heavy monsoon rain.

Q3 Imagine that a small group of students is setting up a rain gauge. Here are some options for the site: (1) The school vegetable garden, (2) The terrace of the school building, (3) Open ground with elevated platform, (4) Compound wall of school, (5) Verandah of the school laboratory. Discuss in your group and finalise the site. Write down the reasons for your decision.

SOLUTION

Best site: Option 3 — Open ground with elevated platform.

Reasons for choosing Option 3:
- The chapter states that a rain gauge must be placed in an open area, away from

objects that might obstruct rain, on a flat surface, and must not tilt or topple with wind.
- Open ground satisfies all these conditions: no walls, trees, or roof to block or redirect falling rain.
- An elevated platform keeps the gauge above grass or puddle level, preventing splash-back from the ground from entering the funnel, which would give an inflated reading.

Why the other options are less suitable:
- (1) School vegetable garden: Plants and watering systems nearby may obstruct rain or splash water into the gauge, affecting accuracy.
- (2) Terrace of the school building: Strong winds at height can tilt the gauge and cause the collected water to spill; the building's edge may also cause turbulence that affects rainfall collection.
- (4) Compound wall: A wall directly next to the gauge obstructs rainfall from one direction and may cause rain shadows or deflection.
- (5) Verandah of the school laboratory: A verandah has a roof overhead, which blocks most rain from entering the funnel at all — making measurement impossible.

Answer: Option 3 (open ground with elevated platform) is the best site: it is unobstructed, flat, stable, and keeps the gauge above ground-splash level, satisfying all the conditions given in the chapter.

Q4 Below is a chart taken from IMD, Jammu and Kashmir (Date: 01-02-2024). Looking at the data available, write a short script to report the weather conditions in different parts of Jammu and Kashmir on the date shown. (Hint: Cover the temperature range, maximum and minimum temperatures, humidity, precipitation, etc.)

SOLUTION

The IMD J&K data for 01-02-2024 gives minimum temperature, maximum temperature, departures from normal, humidity at 0830 and 1730, and rainfall/snowfall for several stations.

Sample weather report script:

"Good evening. This is your weather report for Jammu and Kashmir, dated 1st February 2024.

Temperatures across the region are below normal today. The coldest station is Gulmarg, where the maximum temperature stood at only –2.6°C — 4°C below the seasonal normal — and the minimum plunged to –7.6°C. Pahalgam recorded a maximum of 1.1°C, also 4.5°C below its seasonal normal, with a minimum of –4.1°C. Srinagar's maximum was 6.5°C, some 2.4°C below its normal of 8.9°C, while its minimum was 0.2°C — slightly above the normal minimum of –0.7°C.

On the maximum temperature side, Muzaffarabad was the warmest station, reaching 8.5°C. At the other extreme, Gulmarg's maximum of –2.6°C makes it the coldest spot in the region today.

Humidity levels are very high across the region today. Pahalgam, Kupwara, and Kukernag all recorded relative humidity of 96–97% in the morning, indicating highly saturated air and damp, foggy conditions. Gulmarg recorded a remarkable 100% relative humidity at 1730 hours.

Significant precipitation has been recorded at several stations. Qazigund received 22.0 cm of snowfall (ending 0830), Kukernag 30.0 cm, and Gulmarg 35.0 cm — the heaviest snowfall in the region. Pahalgam recorded 19.4 mm of rainfall alongside 23.0 cm of snow. Kupwara saw 21.9 mm of rainfall and 10.0 cm of snow. Srinagar received only a trace amount of rain.

In summary, Jammu and Kashmir is experiencing a cold, wet spell today, with widespread snowfall at higher altitudes, very high humidity, and temperatures running below seasonal normals. Residents are advised to take precautions against the cold and to stay updated on road conditions in snow-affected areas."

Answer: J&K on 01-02-2024 experienced below-normal temperatures (Gulmarg maximum –2.6°C, minimum –7.6°C; Muzafarabad warmest at 8.5°C), very high humidity (96–100% at most stations), and heavy snowfall (Gulmarg 35.0 cm, Kukernag 30.0 cm, Qazigund 22.0 cm ending 0830). A cold, wet spell with widespread snow affected the region.