1. **What is the term for short-term atmospheric conditions like temperature and rainfall?**
   a) Climate
   b) Weather
   c) Insolation
   d) Humidity
   Answer: b) Weather
   Explanation: Weather refers to short-term atmospheric conditions, while climate is the average over a long period.

2. **What is the average weather condition over 35–40 years called?**
   a) Weather
   b) Insolation
   c) Climate
   d) Precipitation
   Answer: c) Climate
   Explanation: Climate is the long-term average weather condition over a large area, typically 35–40 years.

3. **What is the primary source of energy for Earth's atmosphere?**
   a) Earth's core
   b) Sun
   c) Moon
   d) Oceans
   Answer: b) Sun
   Explanation: The sun provides energy through insolation, driving weather and climate processes.

4. **What is the process by which the Earth's surface transfers heat to the lower atmosphere?**
   a) Convection
   b) Radiation
   c) Conduction
   d) Advection
   Answer: c) Conduction
   Explanation: Conduction transfers heat from the Earth's surface to the air in direct contact with it.

5. **What is the term for the solar energy reaching Earth's surface?**
   a) Terrestrial radiation
   b) Insolation
   c) Greenhouse effect
   d) Convection
   Answer: b) Insolation
   Explanation: Insolation is the solar radiation that reaches Earth's surface.

6. **Which atmospheric gas primarily contributes to the greenhouse effect?**
   a) Nitrogen
   b) Oxygen
   c) Carbon dioxide
   d) Helium

Answer: c) Carbon dioxide
Explanation: CO_2 traps terrestrial radiation, warming the atmosphere.

7. **What balances Earth's temperature by radiating back insolation?**
   a) Heat budget
   b) Convection
   c) Advection
   d) Isotherms
   Answer: a) Heat budget
   Explanation: The heat budget balances incoming and outgoing energy, maintaining Earth's temperature.

8. **When is the maximum temperature of the day typically recorded?**
   a) Sunrise
   b) Noon
   c) 2 PM
   d) Midnight
   Answer: c) 2 PM
   Explanation: The atmosphere takes time to heat, so maximum temperature is recorded at 2 PM.

9. **What instrument measures atmospheric temperature?**
   a) Anemometer
   b) Hygrometer
   c) Thermometer
   d) Wind vane
   Answer: c) Thermometer
   Explanation: A thermometer, specifically a maximum-minimum thermometer, measures temperature.

10. **If the maximum temperature is 40°C and the minimum is 25°C, what is the diurnal range?**
    a) 15°C
    b) 65°C
    c) 32.5°C
    d) 10°C
    Answer: a) 15°C
    Explanation: Diurnal range = Max Temp – Min Temp = 40°C – 25°C = 15°C.

11. **What are lines connecting places with equal temperature called?**
    a) Isobars
    b) Isotherms
    c) Isotopes
    d) Isohyets
    Answer: b) Isotherms
    Explanation: Isotherms connect places with equal temperatures on maps.

12. **Why do isotherms bend at land-sea confluences?**
    a) Equal heating of land and sea
    b) Differential heating of land and sea

c) Same altitude
d) Ocean currents
Answer: b) Differential heating of land and sea
Explanation: Land heats and cools faster than water, causing temperature variations and isotherm bending.

13. **Which factor causes high temperatures near the equator?**
a) High altitude
b) Vertical sun rays
c) Cold ocean currents
d) Low humidity
Answer: b) Vertical sun rays
Explanation: Vertical sun rays at the equator deliver maximum insolation, causing high temperatures.

14. **Why do places like Munnar have lower temperatures?**
a) Proximity to the sea
b) High altitude
c) Warm ocean currents
d) Low latitude
Answer: b) High altitude
Explanation: Temperature decreases with altitude due to lower air density and less heat absorption.

15. **What causes moderate temperatures in coastal areas?**
a) High altitude
b) Land and sea breezes
c) Polar winds
d) High pressure belts
Answer: b) Land and sea breezes
Explanation: Sea breezes cool land during the day, and land breezes warm the sea at night, moderating temperatures.

16. **Which ocean current reduces cold in Western Europe?**
a) Labrador Current
b) North Atlantic Current
c) Kuroshio Current
d) Benguela Current
Answer: b) North Atlantic Current
Explanation: The warm North Atlantic Current raises coastal temperatures in Western Europe.

17. **What is the weight of air on Earth's surface called?**
a) Humidity
b) Atmospheric pressure
c) Insolation
d) Convection
Answer: b) Atmospheric pressure
Explanation: Atmospheric pressure is the weight exerted by air on the Earth's surface.

18. **What happens to atmospheric pressure as altitude increases?**
    a) Increases
    b) Decreases
    c) Remains constant
    d) Doubles
    Answer: b) Decreases
    Explanation: Pressure decreases with altitude at about 1 mb per 10 meters due to lower air density.

19. **What are lines connecting places with equal atmospheric pressure called?**
    a) Isotherms
    b) Isobars
    c) Isohyets
    d) Isotopes
    Answer: b) Isobars
    Explanation: Isobars connect places with equal atmospheric pressure on maps.

20. **Which pressure belt is known as the Doldrums?**
    a) Polar High
    b) Sub-Tropical High
    c) Equatorial Low
    d) Sub-Polar Low
    Answer: c) Equatorial Low
    Explanation: The Equatorial Low Pressure Belt, called Doldrums, has rising air and no winds.

21. **What deflects winds to the right in the Northern Hemisphere?**
    a) Pressure gradient
    b) Frictional force
    c) Coriolis Force
    d) Heat budget
    Answer: c) Coriolis Force
    Explanation: The Coriolis Force, due to Earth's rotation, deflects winds right in the Northern Hemisphere.

22. **Which instrument measures wind speed?**
    a) Hygrometer
    b) Anemometer
    c) Thermometer
    d) Wind vane
    Answer: b) Anemometer
    Explanation: An anemometer measures the speed of wind.

23. **Which winds blow from Sub-Tropical High to Equatorial Low Pressure Belts?**
    a) Westerlies
    b) Polar Winds
    c) Trade Winds
    d) Monsoon Winds
    Answer: c) Trade Winds

Explanation: Trade Winds blow from Sub-Tropical High (30°N/S) to Equatorial Low Pressure Belts.

24. **What are the Northeast Monsoon winds in India associated with?**
    a) Summer rainfall
    b) Winter dry winds
    c) Tropical cyclones
    d) Convectional rainfall
    Answer: b) Winter dry winds
    Explanation: Northeast Monsoon winds blow from land to sea in winter, bringing dry conditions.

25. **Which local wind provides relief from heat in the Sahara Desert?**
    a) Loo
    b) Chinook
    c) Harmattan
    d) Foehn
    Answer: c) Harmattan
    Explanation: Harmattan is a dry wind in the Sahara, relieving intense heat.

26. **What is the direction of winds in a cyclone in the Southern Hemisphere?**
    a) Anticlockwise
    b) Clockwise
    c) Straight
    d) Random
    Answer: b) Clockwise
    Explanation: Cyclones in the Southern Hemisphere have clockwise winds due to the Coriolis effect.

27. **What is the process by which water turns into water vapor?**
    a) Condensation
    b) Evaporation
    c) Precipitation
    d) Sublimation
    Answer: b) Evaporation
    Explanation: Evaporation is the process where water turns into vapor due to heating.

28. **What is the relative humidity at saturation level?**
    a) 0%
    b) 50%
    c) 75%
    d) 100%
    Answer: d) 100%
    Explanation: At saturation, the atmosphere holds maximum water vapor, resulting in 100% relative humidity.

29. **Which clouds are thick, layered, and formed in the lower atmosphere?**
    a) Cirrus
    b) Cumulus

c) Stratus
d) Nimbus
Answer: c) Stratus
Explanation: Stratus clouds are thick, layered, and form in the lower atmosphere.

30. **Why does western Tamil Nadu receive less rainfall during the Southwest Monsoon?**
a) High altitude
b) Rain shadow region
c) Cold ocean currents
d) Low pressure belt
Answer: b) Rain shadow region
Explanation: Western Tamil Nadu lies in the rain shadow region of the Western Ghats, receiving dry air after the monsoon rains fall on Kerala.