

Advanced Meteorological Principles

Meteorology · Answer Key · 10 Questions

1. What is the specific term for the process where water vapor transitions directly into ice without passing through the liquid phase?

- A) Deposition**
- B) Sublimation
- C) Advection
- D) Condensation

2. The dry adiabatic lapse rate is approximately equal to which value?

- A) 9.8°C per 1,000 meters**
- B) 6.5°C per 1,000 meters
- C) 5.0°C per 1,000 meters
- D) 3.2°C per 1,000 meters

3. Which cloud type is characterized by its high altitude, hair-like appearance, and composition primarily of ice crystals?

- A) Altostratus
- B) Cirrus**
- C) Nimbostratus
- D) Cumulonimbus

4. The Coriolis effect, which influences wind direction, is zero at which location?

- A) The North Pole
- B) The South Pole
- C) The Equator**
- D) 45 degrees latitude

5. What is the standard barometric pressure at sea level expressed in hectopascals (hPa)?

- A) 1013.25 hPa**
- B) 980.50 hPa
- C) 1025.75 hPa
- D) 1000.00 hPa

6. The 'Bergeron process' is a primary mechanism in the formation of precipitation and specifically describes what phenomenon?

- A) Evaporative cooling in high humidity
- B) Growth of ice crystals at the expense of supercooled water droplets**
- C) The formation of thunderstorms due to thermal convection
- D) Vertical mixing of air masses along a cold front

7. In the context of atmospheric layers, which layer contains the ozone layer and is characterized by a temperature inversion?

- A) Troposphere
- B) Mesosphere
- C) Stratosphere**
- D) Thermosphere

8. Which meteorological instrument is specifically used to measure solar radiation intensity?

- A) Pyranometer**
- B) Barograph
- C) Psychrometer
- D) Anemometer

9. What is the name of the geostrophic wind that blows parallel to isobars due to the balance between the pressure gradient force and the Coriolis force?

- A) Katabatic wind
- B) Gradient wind**
- C) Thermal wind
- D) Jet stream

10. The 'Walker Circulation' is a conceptual model primarily associated with which global climate phenomenon?

- A) Monsoon shifts
- B) El Niño-Southern Oscillation**
- C) Polar vortex instability
- D) Trade wind inversion