

Chapter 1 Review Questions

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1. The term meteorology:
 - A) can be used interchangeably with *climate* because they have the same meaning.
 - B) is the study of meteors and their effects on the atmosphere.
 - C) is the study of the atmosphere and its related weather systems.
 - D) is the study of the long-term average weather conditions at a given location.
2. An interacting group of parts that is fueled by energy and works to accomplish the movement of matter or energy is called:
 - A) a system.
 - B) a collection.
 - C) a threshold.
 - D) a sphere.
3. Which of the following describes a system's response to *positive feedback*?
 - A) The system slows down and produces less.
 - B) The system maintains status quo and continues to operate as usual.
 - C) The system's operation is enhanced or changed.
 - D) The system reacts in an unpredictable manner.
4. Which of the following outlines the steps of the scientific method in the correct order?
 - A) test hypothesis; develop hypothesis; collect data; accept/modify/reject hypothesis
 - B) collect data; test hypothesis; develop hypothesis; accept/modify/reject hypothesis
 - C) collect data; develop hypothesis; test hypothesis; accept/modify/reject hypothesis
 - D) develop hypothesis; test hypothesis; accept/modify/reject hypothesis; collect data
5. On the average, for every 1 km increase in altitude in the *troposphere* the air temperature:
 - A) rises by day and drops by night.
 - B) drops about 6.5 degrees Celsius.
 - C) rises about 6.5 degrees Celsius.
 - D) remains unchanged for the first 500 m and then drops.
6. The most important source of the free oxygen in our atmosphere is:
 - A) deforestation.
 - B) volcanic degassing.
 - C) the dissociation of water vapor in the upper atmosphere.

- D) green plants that carry on photosynthesis.
7. Which of the following is NOT true of radiosondes?
- A) They are launched hourly from nearly every weather station in the United States.
 - B) They send meteorological data to the ground via radio transmitters.
 - C) They are critical sources of data for weather forecasters.
 - D) They are carried aloft by weather balloons.
8. This atmospheric component absorbs damaging ultraviolet radiation from the Sun.
- A) nitrogen
 - B) helium
 - C) neon
 - D) argon
 - E) ozone
9. The four *thermal* layers of the atmosphere in order beginning from the surface are:
- A) troposphere, stratosphere, mesosphere, thermosphere
 - B) mesosphere, stratosphere, thermosphere, troposphere
 - C) thermosphere, stratosphere, mesosphere, troposphere
 - D) stratosphere, troposphere, mesosphere, thermosphere
10. Which of these is NOT a significant factor in the role played by particles or dust in the atmosphere?
- A) absorption of sunlight
 - B) ozone production
 - C) reflection of sunlight
 - D) cloud formation
11. The *normal lapse rate* applies to the:
- A) stratosphere
 - B) troposphere
 - C) thermosphere
 - D) mesosphere
12. The majority of the water outside of the oceans is in the form of:
- A) streams
 - B) groundwater
 - C) lakes
 - D) glacial ice
 - E) water vapor in the atmosphere
13. Which one of the following gases has the greatest effect on weather?
- A) oxygen
 - B) water vapor
 - C) ozone

- D) argon
- E) nitrogen

14. The Montreal Protocol:

- A) called for a 10 percent reduction in CFC production by the end of the century.
- B) has already created a reduction in ozone-depleting gases in the atmosphere.
- C) is generally considered a diplomatic disaster by most environmentalists.
- D) was not adhered to by the United States.
- E) was designed primarily to address the problem of global warming.

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

15. Weather occurs in the thermosphere.

16. Ozone is continually created in our atmosphere by solar radiation.

17. Ozone is a significant atmospheric component in the greenhouse effect.

18. Weather and climate are synonymous terms.

19. Although carbon dioxide is present only in small amounts, it is still more significant meteorologically than the other more abundant gases composing dry air.

20. Scientific hypotheses are rejected when they do not agree with observed data.

21. The atmosphere ends abruptly at an altitude of 30 kilometers.

22. A scientific hypothesis may be regarded as a tentative explanation of observed facts or events.

23. There is a sharp and definable boundary between the atmosphere and outer space.

24. The environmental lapse rate is not constant.

25. Satellites do not orbit in the thermosphere because the intense heat would quickly incinerate them.