

ESS55: Earth's Atmosphere / Homework #1 (due 4/9/2009)**Multiple Choice**

Identify the letter of the choice that best completes the statement or answers the question.

- _____ 1. The most abundant gases in the earth's atmosphere by volume are:
- carbon dioxide and nitrogen
 - oxygen and water vapor
 - nitrogen and oxygen
 - oxygen and helium
 - oxygen and ozone
- _____ 2. Which of the following is considered a variable gas in the earth's atmosphere?
- water vapor
 - nitrogen
 - oxygen
 - argon
- _____ 3. The gas that shows the most variation from place to place and from time to time in the lower atmosphere:
- ozone (O_3)
 - carbon dioxide (CO_2)
 - water vapor (H_2O)
 - methane (CH_4)
 - argon (Ar)
- _____ 4. Typically, water vapor occupies about what percentage of the air's volume near the earth's surface?
- about 78%
 - about 21%
 - close to 10%
 - less than 4%
- _____ 5. In the atmosphere, tiny solid or liquid suspended particles of various composition are called:
- aerosols
 - carcinogens
 - greenhouse gases
 - microbes
- _____ 6. The most abundant greenhouse gas in the earth's atmosphere:
- carbon dioxide (CO_2)
 - nitrous oxide (N_2O)
 - water vapor (H_2O)
 - methane (CH_4)
 - chlorofluorocarbons (CFCs)
- _____ 7. Which below is not considered a greenhouse gas?
- carbon dioxide (CO_2)
 - nitrous oxide (N_2O)
 - water vapor (H_2O)
 - methane (CH_4)
 - oxygen (O_2)

Name: _____

- ___ 8. Which of the following processes acts to remove carbon dioxide from the atmosphere?
- lightning
 - deforestation
 - photosynthesis
 - burning fossil fuels
- ___ 9. The outpouring of gases from the earth's hot interior is called:
- evaporation
 - outgassing
 - photodissociation
 - the hydrologic cycle
- ___ 10. The earth's first atmosphere was composed primarily of:
- carbon dioxide and water vapor
 - hydrogen and helium
 - oxygen and water vapor
 - argon and nitrogen
- ___ 11. The primary source of oxygen for the earth's atmosphere during the past half billion years or so appears to be:
- volcanic eruptions
 - photosynthesis
 - photodissociation
 - exhalations of animal life
 - transpiration
- ___ 12. The most abundant gas emitted from volcanoes is:
- nitrogen
 - sulfur dioxide
 - helium
 - carbon dioxide
 - water vapor
- ___ 13. This holds a planet's atmosphere close to its surface:
- radiation
 - gravity
 - cloud cover
 - moisture
 - pressure
- ___ 14. The amount of force exerted over an area of surface is called:
- density
 - weight
 - temperature
 - pressure
- ___ 15. Much of Tibet lies at altitudes over 18,000 feet where the pressure is about 500 mb. At such altitudes, the Tibetans are above roughly:
- 10% of the air molecules in the atmosphere
 - 25% of the air molecules in the atmosphere
 - 50% of the air molecules in the atmosphere
 - 75% of the air molecules in the atmosphere
- ___ 16. Which of the following are not units of pressure?
- millibars
 - newtons
 - inches of mercury (Hg)
 - pascals

Name: _____

- ____ 17. The unit of pressure most commonly found on a surface weather map:
- inches of mercury (Hg)
 - millibars
 - pounds per square inch
 - millimeters of mercury (Hg)
- ____ 18. Which of the following weather elements always decreases as we climb upward in the atmosphere?
- wind
 - temperature
 - pressure
 - moisture
 - all of the above
- ____ 19. In the stratosphere, the air temperature normally:
- decreases with increasing height
 - increases with increasing height
 - both increases and decreases depending on the season
 - cannot be measured
- ____ 20. Almost all of the earth's weather occurs in the:
- exosphere
 - stratosphere
 - mesosphere
 - thermosphere
 - troposphere
- ____ 21. The most abundant gas in the stratosphere is:
- oxygen (O₂)
 - nitrogen (N₂)
 - carbon dioxide (CO₂)
 - ozone (O₃)
 - chlorofluorocarbons (CFCs)
- ____ 22. The hottest atmospheric layer is the:
- stratosphere
 - mesosphere
 - thermosphere
 - troposphere
- ____ 23. The temperature of the tropopause:
- is close to the temperature at the earth's surface
 - is much colder than the temperature at the earth's surface
 - has never been measured
 - is much warmer than the temperature at the earth's surface
 - is nearly the same as the sun's temperature
- ____ 24. Warming in the stratosphere is mainly caused by:
- absorption of ultraviolet radiation by ozone
 - release of latent heat energy during condensation
 - chemical reactions between ozone and chlorofluorocarbons
 - frictional heating caused by meteorites

Name: _____

- _____ 25. In a temperature inversion:
- a. air temperature increases with increasing height
 - b. air temperature decreases with increasing height
 - c. air temperature remains constant with increasing height
 - d. it is warmer at night than during the day
- _____ 26. The rate at which temperature decreases with increasing altitude is known as the:
- a. temperature slope
 - b. lapse rate
 - c. sounding
 - d. thermocline
- _____ 27. The electrified region of the upper atmosphere is called the:
- a. thermosphere
 - b. mesosphere
 - c. stratosphere
 - d. ionosphere
 - e. troposphere
- _____ 28. Most of the ionosphere is found in what atmospheric layer?
- a. troposphere
 - b. stratosphere
 - c. mesosphere
 - d. thermosphere
- _____ 29. As altitude increases in the atmosphere, air density decreases _____ the decrease in air pressure.
- a. in a completely different way than
 - b. much less than
 - c. much more than
 - d. in much the same way as
- _____ 30. Atmospheric concentrations of carbon dioxide tend to go up and down throughout the course of a year. The maximum concentration occurs in what season of the year?
- a. early spring
 - b. late summer

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Answer Section

MULTIPLE CHOICE

1. C
2. A
3. C
4. D
5. A
6. C
7. E
8. C
9. B
10. B
11. B
12. E
13. B
14. D
15. C
16. B
17. B
18. C
19. B
20. E
21. B
22. C
23. B
24. A
25. A
26. B
27. D
28. D
29. D
30. A

C 8. B 17. A 25.

 C 1. B 9. C 18. B 26.

 A 2. B 10. B 19. D 27.

 C 3. B 11. E 20. D 28.

 D 4. E 12. B 21. D 29.

 A 5. B 13. C 22. A 30.

 C 6. D 14. B 23.

 E 7. C 15. A 24.

 B 16.