

ESS55: Earth's Atmosphere / Homework #1 (due 4/17/2012)**Multiple Choice**

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

- _____ 1. The electrified region of the upper atmosphere is called the:
- thermosphere
 - mesosphere
 - stratosphere
 - ionosphere
 - troposphere
- _____ 2. 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?
- early spring
 - late summer
- _____ 3. 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
- _____ 4. The amount of force exerted over an area of surface is called:
- density
 - weight
 - temperature
 - pressure
- _____ 5. In a temperature inversion:
- air temperature increases with increasing height
 - air temperature decreases with increasing height
 - air temperature remains constant with increasing height
 - it is warmer at night than during the day
- _____ 6. This holds a planet's atmosphere close to its surface:
- radiation
 - gravity
 - cloud cover
 - moisture
 - pressure
- _____ 7. As altitude increases in the atmosphere, air density decreases _____ the decrease in air pressure.
- in a completely different way than
 - much less than
 - much more than
 - in much the same way as
- _____ 8. The most abundant gas in the stratosphere is:
- oxygen (O₂)
 - nitrogen (N₂)
 - carbon dioxide (CO₂)
 - ozone (O₃)
 - chlorofluorocarbons (CFCs)

Name: _____

- _____ 9. Which below is not considered a greenhouse gas?
- carbon dioxide (CO₂)
 - nitrous oxide (N₂O)
 - water vapor (H₂O)
 - methane (CH₄)
 - oxygen (O₂)
- _____ 10. Which of the following processes acts to remove carbon dioxide from the atmosphere?
- lightning
 - deforestation
 - photosynthesis
 - burning fossil fuels
- _____ 11. 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
- _____ 12. The most abundant gas emitted from volcanoes is:
- nitrogen
 - sulfur dioxide
 - helium
 - carbon dioxide
 - water vapor
- _____ 13. 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)
- _____ 14. The rate at which temperature decreases with increasing altitude is known as the:
- temperature slope
 - lapse rate
 - sounding
 - thermocline
- _____ 15. 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
- _____ 16. Almost all of the earth's weather occurs in the:
- exosphere
 - stratosphere
 - mesosphere
 - thermosphere
 - troposphere
- _____ 17. In the atmosphere, tiny solid or liquid suspended particles of various composition are called:
- aerosols
 - carcinogens
 - greenhouse gases
 - microbes

Name: _____

- ____ 18. Most of the ionosphere is found in what atmospheric layer?
- troposphere
 - stratosphere
 - mesosphere
 - thermosphere
- ____ 19. The hottest atmospheric layer is the:
- stratosphere
 - mesosphere
 - thermosphere
 - troposphere
- ____ 20. The most abundant greenhouse gas in the earth's atmosphere:
- carbon dioxide (CO₂)
 - nitrous oxide (N₂O)
 - water vapor (H₂O)
 - methane (CH₄)
 - chlorofluorocarbons (CFCs)
- ____ 21. Which of the following are not units of pressure?
- millibars
 - newtons
 - inches of mercury (Hg)
 - pascals
- ____ 22. 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
- ____ 23. The outpouring of gases from the earth's hot interior is called:
- evaporation
 - outgassing
 - photodissociation
 - the hydrologic cycle
- ____ 24. 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
- ____ 25. Which of the following is considered a variable gas in the earth's atmosphere?
- water vapor
 - nitrogen
 - oxygen
 - argon
- ____ 26. 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%

Name: _____

- _____ 27. The gas that shows the most variation from place to place and from time to time in the lower atmosphere:
- a. ozone (O_3)
 - b. carbon dioxide (CO_2)
 - c. water vapor (H_2O)
 - d. methane (CH_4)
 - e. argon (Ar)
- _____ 28. The earth's first atmosphere was composed primarily of:
- a. carbon dioxide and water vapor
 - b. hydrogen and helium
 - c. oxygen and water vapor
 - d. argon and nitrogen
- _____ 29. Which of the following weather elements always decreases as we climb upward in the atmosphere?
- a. wind
 - b. temperature
 - c. pressure
 - d. moisture
 - e. all of the above
- _____ 30. The temperature of the tropopause:
- a. is close to the temperature at the earth's surface
 - b. is much colder than the temperature at the earth's surface
 - c. has never been measured
 - d. is much warmer than the temperature at the earth's surface
 - e. is nearly the same as the sun's temperature