

**ESS55: EARTH'S ATMOSPHERE / Homework #1 / (due 4/13/2017)**

Name \_\_\_\_\_ Student ID: \_\_\_\_\_ version: \_\_\_\_\_

Please fill in your answer(s)

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

**ESS55: Earth's Atmosphere / Homework #1 (due 4/13/2017)****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<sub>3</sub>)
  - carbon dioxide (CO<sub>2</sub>)
  - water vapor (H<sub>2</sub>O)
  - methane (CH<sub>4</sub>)
  - 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<sub>2</sub>)
  - nitrous oxide (N<sub>2</sub>O)
  - water vapor (H<sub>2</sub>O)
  - methane (CH<sub>4</sub>)
  - chlorofluorocarbons (CFCs)
- \_\_\_\_\_ 7. Which below is not considered a greenhouse gas?
- carbon dioxide (CO<sub>2</sub>)
  - nitrous oxide (N<sub>2</sub>O)
  - water vapor (H<sub>2</sub>O)
  - methane (CH<sub>4</sub>)
  - oxygen (O<sub>2</sub>)

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- \_\_\_\_\_ 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

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- \_\_\_\_ 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 (O<sub>2</sub>)
  - nitrogen (N<sub>2</sub>)
  - carbon dioxide (CO<sub>2</sub>)
  - ozone (O<sub>3</sub>)
  - 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

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- \_\_\_\_ 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