

SO YOU THINK YOU KNOW ABOUT GLOBAL WARMING!

TAKE THIS QUIZ (7 questions have more than 1 correct answer)

1. The Earth is heated internally by gravitation and radioactive decay. It also heated externally by the sun. The internal temperature at the center of the Earth is 10,800F. The temperature of the surface of the Sun is 10,400F. Note: The center of the Earth is only 4000 miles away while the sun's surface is typically 92,500,000 miles away. What percentage of the surface heat of the Earth is derived from the sun?

- a. About 50 %
- b. Less than 32.5 %
- c. Approximately 75 %
- d. Greater than 99.9 %

2. The amount of heat absorbed by the Earth depends on the Earth's albedo. Albedo is a measure of:

- a. Reflected electromagnetic radiation
- b. Absorbed electromagnetic radiation
- c. Refracted electromagnetic radiation
- d. Conduction of heat of electromagnetic radiation

3. Which one of the following factors does not significantly affect the climate?

- a. Altitude
- b. Seasons
- c. Albedo
- d. Greenhouse gases
- e. Latitude
- f. Cloud cover
- g. Volcanic activity
- h. Dust
- i. Tornadoes
- j. Cosmic radiation

4. Greenhouse gases are:
 - a. Undesirable, because they cause global warming
 - b. Desirable, because they cause global warming
 - c. Mostly caused by man
 - d. Something we can't control

5. What if we eliminated all greenhouse gases:
 - a. Humans would be much better off than we are today
 - b. We would destroy all plant and animal life on earth
 - c. Life would thrive and species diversity would increase

6. The greenhouse gas responsible for ~95% of the global heating is;
 - a. Carbon dioxide
 - b. Water vapor
 - c. Methane
 - d. Ozone
 - e. Oxides of nitrogen

7. The oxygen concentration in air is 210 molecules out of every 1000 molecules of air. Carbon dioxide concentration in the atmosphere is:
 - a. 1 molecule in every 2630 air molecules
 - b. 2 molecules in every 1075 air molecules
 - c. 53 molecules in every 1000 air molecules
 - d. 76 molecules in every 1000 air molecules

8. The hottest decade in the US history was the:
 - a. 1900's
 - b. 1930's
 - c. 1970's
 - d. 1990's

9. Since the last Ice Age (10,000-20000 years ago), the oceans have risen:
 - a. 970 feet
 - b. 394 feet
 - c. 125 feet
 - d. 27 feet

10. The amount of carbon dioxide, methane, and oxides of nitrogen has increased at similar rates, simultaneously, due to:

- a. Man's industrialization of manufacturing processes since 1850
- b. Temperature increases
- c. Deforestation
- d. Eutrophication

11. A total increase of 3.2 billion tons of carbon is added to the atmosphere every year. Cutting American carbon dioxide emissions by about 25 billion tons by 2050 will result in:

- a. Loss of 1.36 trillion dollars of the Gross Domestic Product by 2025 and avoid 0.040-0.07 F warming.
- b. Have very little effect on the Gross Domestic Product by 2025 and result in avoidance of 2.5-3.0 F warming.
- c. Loss of 530 billion in Gross Domestic Product by 2025 and keep the present temperature of the Earth constant.
- d. Have virtually no effect on the Gross Domestic Product by 2025. but greater emission by China and India will completely overcome our carbon dioxide reductions and result in increased global warming.

12. The Earth's atmosphere presently holds about 790 billion tons of carbon as carbon dioxide gas. The amount of carbon dioxide in the ocean is:

- a. Twice as much
- b. Over 50X as much
- c. 17X as much
- d. 24% as much

13. The danger of the present rate of increasing carbon dioxide in the atmosphere is that:

- a. We will reach a "tipping point" and have runaway global heating like the planet Venus.
- b. We will increase the number and severity of hurricanes and tornadoes.
- c. We will cause the loss of thousands of species of plants and animals.
- d. The oceans will become too acidic and most species will perish.
- e. None of the above.

14. The level of carbon dioxide in the Earth's atmosphere is:
- The greatest in the history of the planet.
 - Close to the greatest since the formation of the present atmosphere 600,000,000 years ago (when the "explosion" of multi-celled animals and plants occurred).
 - Is considerably lower than it has been for 99% of the last 600,000,000 years.
15. Global warming results in:
- Cooler Summer and Autumn days and warmer Winter and Spring days.
 - Warmer days and nights during all seasons.
 - Cooler summer days and warmer nights
 - Warmer days and cooler nights.
16. Excess carbon dioxide:
- Could be captured and stored (sequestered) in the ocean, but the cost is prohibitively expensive
 - Cannot be stored in either the oceans or in oil fields.
 - Could be taken up by increasing the plant life.
17. Man contributes what percentage of carbon dioxide released into the atmosphere every year (due to burning of fossil fuels):
- 22.5%
 - 37.6%
 - 3.2%
 - 13.6%
18. Global warming in the 1965-1995 period resulted in:
- Roughly uniform increases in temperature throughout the globe.
 - Major increases in Arctic areas, but only slight increases elsewhere.
 - Cooling in Greenland, Africa, and Western Australia, and heating in Alaska and Siberia.
19. If we double the carbon dioxide level, average temperatures will:
- Increase a fraction of a degree F.
 - Increase 2-3 degrees F
 - Increase 7-10 degrees F

20. The best correlation factor for temperature increases in the Arctic is:
 - a. The increased level of carbon dioxide
 - b. The increased level of solar radiation from the sun.

21. The average Earth's temperature in the last 6 million years has:
 - a. Become progressively colder
 - b. Stayed essentially the same
 - c. Become progressively warmer

22. The Earth is today is:
 - a. Colder than it has been for 450,000,000 years.
 - b. Warmer than it has been for 75,000,000 years
 - c. Essentially the same temperature as the last 600,000,000 years.

23. The Polar ice caps are in danger of disappearing in the summer at:
 - a. The North Pole
 - b. The South Pole
 - c. Both the North and South Poles.

24. Global warming is being experienced on the following planets:
 - a. Only Mars
 - b. Jupiter, Saturn and Uranus
 - c. Both Mars and Jupiter
 - d. Neither Mars, Jupiter, Saturn, nor Uranus

25. In the last 100 years, the New York Times has warned of:
 - a. Global warming in the 1930's and 2005 may be out of control
 - b. Global ice age in the 1920's and 1970's may be out of control.
 - c. Only warned about ice ages
 - d. Only warned about global warming
 - e. Mentioned neither one.

26. The energy being generated yearly by the world's electrical facilities is:
 - a. 29 trillion KWH (kilowatt hours)
 - b. 5 trillion KWH
 - c. 500 billion KWH
 - d. 50,000 MWH (megawatt hours)

27. To replace all carbon fueled electrical plants in the world with 1000 megawatt nuclear generators would require opening a new plant:
- Every week for 10 years.
 - Every week for 18.5 years.
 - Every month for 28.5 years.
 - Every week for 55.5 years.
28. The Earth's climate:
- Can be controlled by man with proper governmental co-operation.
 - Changed significantly because of man's impact.
 - Changes constantly in the history of the Earth, often abruptly
29. The total energy used by man on Earth is equal to the energy supplied by the sun in:
- 3 minutes.
 - 1 ½ hours
 - 3.5 days
 - 31 days
30. A typical hurricane has the energy of:
- 10,000 tons of TNT
 - 5 million tons of TNT
 - 1.1 billion tons of TNT
 - 1trillion tons of TNT
31. The maximum concentration of ozone in mid latitudes occurs at an altitude of 20 km (12.5 miles), although ozone is found throughout the altitude range from sea level to 75 km (45.5 miles). At 20 km, the concentration is approximately 285 million billion molecules per cubic foot. If all of this ozone were in a single layer at 14.7 psi (normal air pressure), the thickness of the layer covering the Earth at mid latitudes would be:
- 0.120 inch thick
 - 17.5 feet thick
 - ¼ mile thick
 - 4.2 miles thick

32. The levels of carbon dioxide changes during each day and during the seasons. The Keeling Curve expresses these oscillations which are over ten times as great as the increase due to fossil fuel burning each year. Which statement or statements are correct?

- a. Carbon dioxide levels increase in winter and decrease in summer.
- b. Carbon dioxide levels increase in summer and decrease in winter.
- c. Carbon dioxide levels increase in daytime and decrease at night.
- d. Carbon dioxide levels increase at night and decrease during the daytimes.

33. Do the levels of stratospheric ozone vary during the seasons and during the day? Select the correct statement or statements.

- a. The level of ozone increases during the daytime and decreases at night.
- b. The level of ozone increases at night and decreases during the day.
- c. The level of ozone remains essentially constant during a day
- d. The level of ozone decreases during the winter and increases during the summer.
- e. The level of ozone decreases during the summer and increases during the winter.
- f. The level of ozone does not vary with the season.

ANSWERS TO GLOBAL WARMING QUIZ

1. d. Greater than 99.98 %. The Earth's internal heat contributes 0.0614 watts per square meter while the sun contributes more than 340 watts per square meter.
2. a. Albedo is a measure of reflected light from the Earth. The Earth's Albedo is About 0.31, which means that 31% of the sun's rays are reflected and do not heat the Earth surface.
3. i. Tornadoes. These are caused by conditions at the fronts of air masses and become a immediate danger, but do not have an effect on the overall climate.
Cosmic radiation has been found to affect cloud formation and hence, climate. Dust levels in Vostok Ice core samples show that when dust exceeds 1.5 parts per million, global heating soon occurs.
4. b. Desirable because they cause global warming. Without them, the Earth's average temperature would be 0°F.
d. Something we can't control. We cannot control the evaporation of water. Water vapor accounts for 95% of global heating, nor can we economically control carbon dioxide emissions.
5. b. We would destroy all plant and animal life on the Earth. Water vapor and carbon dioxide are used by plants to make all our food---carbohydrates, and fats. Oxides of nitrogen, carbon dioxide and water are used by plants to make proteins.
6. b. Water vapor. Text books and the government admit this.
7. a. The concentration of carbon dioxide in the atmosphere is 380 parts per million or 0.038 % or 1 part in 2632 molecules. Notice, it varies from day to night and from season to season.
8. b. Even NASA was forced to admit their error in claiming the 1990's was the hottest decade. In the 50 states, 24 of the all-time highest temperatures occurred in the 1930's, whereas only 6 occurred in the 1990's per the 2006 World Almanac.
9. b. 394 feet. Glaciers ~2 kilometers thick covered much of North America, Europe, and Western Siberia, and their melting caused a significant rise in the oceans.
10. b. Vostok ice core data (Antarctica) show that every time the temperatures rise, within 800 years, the simultaneous increases in methane, carbon dioxide and oxides of nitrogen occur, dating back 600,000 years. This is long before man became a factor.
11. a. Data generated by Congress on the McCain Lieberman bill S132, 2005.

12. b. Over 50X as much. This dissolved carbon dioxide feed the phytoplankton (microscopic plants) which produces both food and oxygen for the fish in the ocean.
13. e. None of the above. All of theses have been used as scare techniques by those who have political agendas. Looking back in history to the explosion of multi-celled species about 600 million years ago, the carbon dioxide was up to 10X higher than present levels. For 99.9% of the time it was above present levels, yet the oceans did not become too acid to support life, and everything did quite well. Venus has run-away global warming because of 4 things: Its carbon dioxide content is ~300,000X that of ours, it receives 4X as much sunlight as the Earth, because it is closer to the sun, and each day is 121.5 days long---so it lacks the quick, repetitive night times to cool and reradiate the energy to outer space, and Venus does not have oceans (which moderate heating). Note: the moon, which is essentially the same distance from the sun as the Earth, has a daytime lasting 14.75 days and gets 250F in the sun by noontime and below -250F at nighttime.
14. c. Lower than seen in past 600 million years.
15. a. Global warming causes more evaporation, hence more clouds.
This moderates summer days by blocking the sun, resulting in a 0.03F cooling in each decade since 1930.
 - c. Cooler summer days and warmer nights. The increased cloud cover keeps the Earth from losing as much heat at night versus a cloudless night.
16. a &c. Deforestation has also taken its toll on the planet.
17. c. Man contributes 6 billion tons of carbon per year (as carbon dioxide, while nature emits over 200 billion tons per year. Nature also absorbs all except 3.2 billion tons which ends up in the atmosphere.
18. b. & c.
19. a. This is based on work by Dr. Heinz Hug. Carbon dioxide can only absorb a small fraction of the electromagnetic spectra emitted by the Earth (the 15 micron band). All of this is completely absorbed in the first 10 feet of atmosphere. You can't absorb any more than 100% of this frequency, however, if you double the carbon dioxide, you will absorb some slight energy from the edges of this band. This is based on actual tests and disagrees with the theoretical IPCC analyses.
20. b. The increased level of solar radiation.
21. a. Become increasing cooler.
22. a. Colder than it has been for 450 million years.
23. a. The Arctic region. It has happened many times in Earth's history.
24. c. Both Mars and Jupiter.
25. a & b.

