Practice Problems Related to Climate Change (answers on last page)

1) What is meant by the term "climate"?
   A) The daily conditions of the atmosphere.
   B) A description of what the environment is like on a given day.
   C) A specific weather event happening over a short period of time.
   D) The weather conditions prevailing in an area over a long period of time.

2) What is meant by the term "greenhouse gas"?
   A) They are gases that are used in greenhouses to help the plants grow.
   B) They are gases that trap infrared radiation within the earth's atmosphere.
   C) They are gases that help reflect solar radiation before it can be absorbed by the Earth.
   D) They are gases that convert visible light into infrared radiation.

3) Which one of the following gases is not a greenhouse gas?
   A) H_2O B) O_2 C) CO_2 D) CH_4

4) Which statement about greenhouse gases is false?
   A) If there were no greenhouse gases in our atmosphere, Earth's temperature would be very cold.
   B) The concentration of greenhouse gases in Earth's atmosphere has increased dramatically since the industrial revolution.
   C) When levels of greenhouse gases in Earth's atmosphere increases, the Earth's temperature decreases.
   D) Some greenhouse gases are necessary in Earth's atmosphere for life to exist as we know it.

5) Which of the following components of the carbon cycle does not add CO_2 to the atmosphere?
   A) Deforestation
   B) Burning fossil fuels
   C) Volcanic eruptions
   D) Photosynthesis

6) Which of the following is not an expected impact of climate change?
   A) Species extinction
   B) Oceans become less acidic
   C) Rising sea levels
   D) Increases in severe weather events

7) Which of the following statements about arctic ice cores is false?
   A) They contain trapped gases that can be used to determine the concentration of CO_2 in the Earth's atmosphere in the distant past.
   B) They contain water with different isotopes of hydrogen that can be used to determine the temperature of the Earth in the distant past.
   C) The oldest ice cores provide temperature records going back about 800,000 years.
   D) They indicate that the current levels of CO_2 in the Earth's atmosphere are similar to those levels found during previous ice ages.

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The following questions were not specifically covered in our climate change lecture; rather, they integrate information about climate change with the types of calculations and conversion factors that we have been learning in class.

8) There are roughly 325,000,000 people in the U.S. If each year, the U.S. emits roughly 18,000 kg of CO_2 per person, how many tons of CO_2 are emitted in the U.S. in one year? (1 ton = 907 kg)
   A) 3.8×10^9 tons of CO_2
   B) 6.4×10^9 tons of CO_2
   C) 6.44×10^6 tons of CO_2
   D) 6449 tons of CO_2

9) Coal is a common fossil fuel. The process of burning 1.00 lb of coal creates 3.33 lbs of CO_2. How many lbs of CO_2 are produced if 525 kg of coal is burned? (1 lb = 454 grams)
   A) 174 lbs of CO_2
   B) 2.90×10^5 lbs of CO_2
   C) 3.85×10^3 lbs of CO_2
   D) 4.36 lbs of CO_2

10) The average person commutes a total of 25.7 miles each day to get to and from work or school. If a single car emits 411 grams of CO_2 per mile, how many kg of CO_2 does one commuter release into the atmosphere in a 5-day work/school week?
   A) 52.8 kg of CO_2
   B) 5.28×10^4 kg of CO_2
   C) 10.6 kg of CO_2
   D) 1.06×10^4 kg of CO_2

Answers

1) D	6) B
2) B	7) D
3) B	8) B
4) C	9) C
5) D	10) A