

Chem / Envsty L111:  
Spring 2007  
Quiz 5

Name \_\_\_\_\_

1. Find the molar mass of ethanol, C<sub>2</sub>H<sub>6</sub>O.

a. 29.02 g/mol

b. 45.06 g/mol

c. 46.07 g/mol

d. 110.0 g/mol

$$(2 \times 12.011) + (6 \times 1.008) + 16.00 = 46.07$$

19/21 answered correctly

2. What international agreement attempted to reduce greenhouse gas emissions?

a. The Kyoto Protocol

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b. The Montreal Protocol

c. The Oslo Accords

d. The Nuremburg Treaty

3. How many atoms are present in 0.35 moles of carbon dioxide?

a.  $5.81 \times 10^{-25}$

b. 15

c.  $2.11 \times 10^{23}$

d.  $6.32 \times 10^{23}$

$$0.35 \times (6.02 \times 10^{23}) = 2.11 \times 10^{23}$$

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4. Which practices might be described as carbon sequestration?

I. Planting trees

II. Deforestation

III. Pumping carbon dioxide deep into the ocean.

IV. Increasing combustion of fossil fuels.

a. I and II only

Deforestation would ADD CO<sub>2</sub> to the atmosphere

b. II and III only

As would increasing fossil fuel combustion

c. III and IV only

Both re-forestation and CO<sub>2</sub> pumping are

d. I and III only

considered Sequestration.

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5. In order to make useful predictions, which factors must be accounted for by climatic models?

I. Sunspot activity

II. Cloud cover

III. Volcanic activity

IV. Combustion of fossil fuels

a. IV only

The fact that models must include ALL these

b. II and III only

factors is what makes predicting the future

c. III and IV only

so hard – and what makes the uncertainty

d. I, II III, and IV

so large.

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6. Octane ( $C_8H_{18}$ ) is one of the principal components of gasoline. How many moles of  $CO_2$  are produced during the combustion of 3.0 mol of octane?

a. 3

b. 8

c. 24

d. 26

Each mole of octane contains 8 moles of carbon, so  
3 moles of octane makes  $3 \times 8 = 24$  moles of  $CO_2$  18/21

7. The carbon cycle refers to

a. the mechanism by which carbon dioxide causes global warming.

b. the frequency of light energy that affects the rotational energy of carbon dioxide.

c. the oxidation of glucose to form carbon dioxide and water.

d. the movement of carbon through living organisms, the atmosphere, the sea, and the earth. 19/21

8. Which country has the highest per capita emission of carbon dioxide?

a. United States

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b. Germany

c. Canada

d. Saudi Arabia

9. The Intergovernmental Panel on Climate Change (IPCC) issued a report in 2001 which attached probabilities to the predictions and statements made. Which prediction/statement was considered "Very Unlikely"?

a. The temperatures in the northern hemisphere during the 20<sup>th</sup> century have been the highest for the past 1,000 years.

b. Carbon dioxide contributes to higher global temperatures.

c. The observed warming over the past 100 years is due solely to climatic variability 15/21

d. Increased carbon dioxide levels are a consequence of human activity.

10. Which atmospheric component does not contribute to global warming?

a.  $H_2O$

b.  $CO_2$

c.  $N_2$

d.  $O_3$

$N_2$  is perfectly symmetric, and no vibration can produce a change in electron density. 17/21