Chemistry 115 Name key

Dr. Cary Willard

Quiz 2a (20 points) February 11, 2010

Must show all work to receive credit. Use proper significant figures.

1. (5 points) A Honda Civic gets 16.0 km per liter in highway driving. What is the mileage in miles per gallon (hint: 1 mile = 5280 feet, 1 gal = 4 qt)

$$?\frac{mi}{gal}=\frac{16.0 km}{1 L}×\frac{1000 m}{1 km}×\frac{100 cm}{1 m}×\frac{1 in}{2.54 cm}×\frac{1 ft}{12 in}×\frac{1 mi}{5280 ft}×\frac{1 L}{1.06 qt}×\frac{4 qt}{1 gal}=\frac{37.5 mi}{gal}$$

1. (5 points) On a sunny day in San Diego the temperature outside is 85oF. Calculate this temperature in degrees Celsius.

$$℃=\left(85℉-32℉\right)\left(\frac{100℃}{180℉}\right)=29℃$$

1. (3 points) Give an example of each of the following:

|  |  |
| --- | --- |
| Transition Metal | Co |
| Nobel gas | Kr |
| Diatomic element | N2 |

1. (4 points) Write the ion that would be formed from each of the following elements and give its correct name.

|  |  |  |
| --- | --- | --- |
| Element | Ion formed | Name |
| Mg | Mg+2 | Magnesium ion |
| Cl | Cl-1 | Chloride ion |

1. (3 points) Explain why the filling of a McDonald’s hot apple pie will burn your mouth when the pie is cool enough to hold in your hands. Use chemical reasoning.

The filling contains water with a very high specific heat. In order for the filling to cool to the temperature of your mouth it must transfer a lot of heat to you. Thus you get burned!!

Chemistry 115 Name key

Dr. Cary Willard

Quiz 2b (20 points) February 11, 2010

Must show all work to receive credit. Use proper significant figures.

1. (5 points) A Honda Civic gets 13.0 km per liter in city driving. What is the mileage in miles per gallon (hint: 1 mile = 5280 feet, 1 gal = 4 qt)

$$?\frac{mi}{gal}=\frac{13.0 km}{1 L}×\frac{1000 m}{1 km}×\frac{100 cm}{1 m}×\frac{1 in}{2.54 cm}×\frac{1 ft}{12 in}×\frac{1 mi}{5280 ft}×\frac{1 L}{1.06 qt}×\frac{4 qt}{1 gal}=\frac{30.5 mi}{gal}$$

1. (5 points) On a sunny day in San Diego the temperature outside is 95oF. Calculate this temperature in degrees Celsius.

$$℃=\left(95℉-32℉\right)\left(\frac{100℃}{180℉}\right)=35℃$$

1. (3 points) Give an example of each of the following:

|  |  |
| --- | --- |
| Representative element | C |
| Alkali metal | Li |
| Diatomic element | N2 |

1. (4 points) Write the ion that would be formed from each of the following elements and give its correct name.

|  |  |  |
| --- | --- | --- |
| Element | Ion formed | Name |
| Li | Li+1 | Lithium ion |
| P | P-3 | Phosphide ion |

1. (3 points) Explain why the filling of a McDonald’s hot apple pie will burn your mouth when the pie is cool enough to hold in your hands. Use chemical reasoning.

The filling contains water with a very high specific heat. In order for the filling to cool to the temperature of your mouth it must transfer a lot of heat to you. Thus you get burned!!