Chemistry 115 Name key

Dr. Cary Willard

Quiz 3a (20 points) September 12, 2012

All work must be shown to receive credit. Give answers to the correct number of significant figures.

|  |  |
| --- | --- |
| Fat | 9.0 Cal/g |
| Protein | 4.0 Cal/g |
| Carbohydrate | 4.0 Cal/g |

1. (6 points)You have just consumed a serving of trail mix with 8.3 g of fat, 12.7 g of carbohydrate, and 3.9 g of protein. Calculate the number of Calories from fat, carbohydrate, and protein, as well as the total Calories you have consumed.

$$8.3 g fat × \frac{9.0 Cal}{1 g fat} = 75 Cal$$

$$12.7 g carbohydrate ×\frac{4.0 Cal}{ 1 g carbohydrate} = 51 Cal$$

$$3.9 g protein × \frac{4.0 Cal}{1 g protein} = 16 Cal$$

Calories from fat 75

Calories from carbohydrate 51

Calories from protein 16

Total Calories 142

1. (4 points) If you wish to exercise just long enough to burn off the calories you ate in question 1, how many hours would you need to swim if swimming uses 500. kcal/hr?

$$142 Cal×\frac{1 kcal}{1 Cal}×\frac{1 hr}{500. kcal}=0.284 hr$$

1. (6 points) Determine the number of protons, neutrons, and electrons in a neutral atom of nickel 63?

Neutrons 35

Protons 28

Electrons 28

1. (4 points) Describe the experiment performed by Goldstein and Crooks which first indicated the existence of electrons. What did they do and how did the experiment demonstrate the existence and nature of electrons?

Goldstein and Crooks ran and electrical current through an evacuated glass tube with a strip of metal painted with fluorescent paint. They observed a stream of particles flowing through the tube which was attracted to a positive charge and repelled by a negative charge. They concluded that the beam was composed of negatively charged particles they called electrons.

Chemistry 115 Name key

Dr. Cary Willard

Quiz 3b (20 points) September 12, 2012

All work must be shown to receive credit. Give answers to the correct number of significant figures.

|  |  |
| --- | --- |
| Fat | 9.0 Cal/g |
| Protein | 4.0 Cal/g |
| Carbohydrate | 4.0 Cal/g |

1. (6 points)You have just consumed a serving of BBQ chips with 9.2 g of fat, 15 g of carbohydrate, and 2.2 g of protein. Calculate the number of Calories from fat, carbohydrate, and protein, as well as the total Calories you have consumed.

$$9.2 g fat × \frac{9.0 Cal}{1 g fat} = 83 Cal$$

$$15 g carbohydrate ×\frac{4.0 Cal}{ 1 g carbohydrate} = 60 Cal$$

$$2.2 g protein × \frac{4.0 Cal}{1 g protein} = 8.8 Cal$$

Calories from fat 83

Calories from carbohydrate 60.

Calories from protein 8.8

Total Calories 152

1. (4 points) If you wish to exercise just long enough to burn off the calories you ate in question 1, how many hours would you need to swim if swimming uses 500. kcal/hr?

$$152 Cal×\frac{1 kcal}{1 Cal}×\frac{1 hr}{500. kcal}=0.304 hr$$

1. (6 points) Determine the number of protons, neutrons, and electrons in a neutral atom of chromium-55?

Neutrons 31

Protons 24

Electrons 24

1. (4 points) Describe the experiment performed by Goldstein and Crooks which first indicated the existence of electrons. What did they do and how did the experiment demonstrate the existence and nature of electrons?

Goldstein and Crooks ran and electrical current through an evacuated glass tube with a strip of metal painted with fluorescent paint. They observed a stream of particles flowing through the tube which was attracted to a positive charge and repelled by a negative charge. They concluded that the beam was composed of negatively charged particles they called electrons.

Chemistry 115 Name key

Dr. Cary Willard

Quiz 3c (20 points) September 12, 2012

All work must be shown to receive credit. Give answers to the correct number of significant figures.

|  |  |
| --- | --- |
| Fat | 9.0 Cal/g |
| Protein | 4.0 Cal/g |
| Carbohydrate | 4.0 Cal/g |

1. (6 points)You have just consumed a serving of tortilla chips with 7.4g of fat, 17.8 g of carbohydrate, and 2.0 g of protein. Calculate the number of Calories from fat, carbohydrate, and protein, as well as the total Calories you have consumed.

$$7.4 g fat × \frac{9.0 Cal}{1 g fat} = 67 Cal$$

$$17.8g carbohydrate ×\frac{4.0 Cal}{ 1 g carbohydrate} = 71 Cal$$

$$2.0 g protein × \frac{4.0 Cal}{1 g protein} = 8.0 Cal$$

Calories from fat 67

Calories from carbohydrate 71

Calories from protein 8.0

Total Calories 146

1. (4 points) If you wish to exercise just long enough to burn off the calories you ate in question 1, how many hours would you need to swim if swimming uses 500. kcal/hr?

$$146 Cal×\frac{1 kcal}{1 Cal}×\frac{1 hr}{500. kcal}=0.292 hr$$

1. (6 points) Determine the number of protons, neutrons, and electrons in a neutral atom of manganese 57?

Neutrons 32

Protons 25

Electrons 25

1. (4 points) Describe the experiment performed by Goldstein and Crooks which first indicated the existence of electrons. What did they do and how did the experiment demonstrate the existence and nature of electrons?

Goldstein and Crooks ran and electrical current through an evacuated glass tube with a strip of metal painted with fluorescent paint. They observed a stream of particles flowing through the tube which was attracted to a positive charge and repelled by a negative charge. They concluded that the beam was composed of negatively charged particles they called electrons.

Chemistry 115 Name key

Dr. Cary Willard

Quiz 3d (20 points) September 12, 2012

All work must be shown to receive credit. Give answers to the correct number of significant figures.

|  |  |
| --- | --- |
| Fat | 9.0 Cal/g |
| Protein | 4.0 Cal/g |
| Carbohydrate | 4.0 Cal/g |

1. (6 points)You have just consumed a serving of sunflower seeds with 14.1 g of fat, 6.8 g of carbohydrate, and 5.5 g of protein. Calculate the number of Calories from fat, carbohydrate, and protein, as well as the total Calories you have consumed.

$$14.1 g fat × \frac{9.0 Cal}{1 g fat} = 127 Cal$$

$$6.8 g carbohydrate ×\frac{4.0 Cal}{ 1 g carbohydrate} = 27 Cal$$

$$5.5 g protein × \frac{4.0 Cal}{1 g protein} = 22 Cal$$

Calories from fat 127

Calories from carbohydrate 27

Calories from protein 22

Total Calories 176

1. (4 points) If you wish to exercise just long enough to burn off the calories you ate in question 1, how many hours would you need to swim if swimming uses 500. kcal/hr?

$$176 Cal×\frac{1 kcal}{1 Cal}×\frac{1 hr}{500. kcal}=0.352 hr$$

1. (6 points) Determine the number of protons, neutrons, and electrons in a neutral atom of cobalt-62?

Neutrons 35

Protons 27

Electrons 27

1. (4 points) Describe the experiment performed by Goldstein and Crooks which first indicated the existence of electrons. What did they do and how did the experiment demonstrate the existence and nature of electrons?

Goldstein and Crooks ran and electrical current through an evacuated glass tube with a strip of metal painted with fluorescent paint. They observed a stream of particles flowing through the tube which was attracted to a positive charge and repelled by a negative charge. They concluded that the beam was composed of negatively charged particles they called electrons.