Chemistry 141 Name Key

Dr. Cary Willard

Quiz 1A (20 points) February 2, 2010

1. (5 points) A sunscreen preparation contains 2.50% by mass benzyl salicylate. If a tube contains 4.0 oz of sunscreen, how many kilograms of benzyl salicylate are needed to manufacture 325 tubes of sunscreen?

$$?kg BS=325 tube ss×\frac{4 oz ss}{1 tube ss}×\frac{1 lb ss}{16 oz ss}×\frac{454 g ss}{1 lb ss}×\frac{2.50 g BS}{100 g ss}×\frac{1 kg BS}{1000 g BS}=0.92 kg BS$$

1. (5 points) The density of titanium is 4.51 g/cm3. What is the volume in cubic inches of 3.5 lb of titanium?

$$? in^{3}Ti=3.5 lb Ti×\frac{454 g Ti}{1 lb Ti}×\frac{1 cm^{3}Ti}{4.51 g Ti}×\left(\frac{1 in}{2.54 cm}\right)^{3}=22 in^{3}Ti$$

1. (6 points) On a new Jekyll temperature scale, water freezes at 42oJ and boils at 384 oJ. On another new temperature scale, the Hyde scale, water freezes at 0oH and boils at 135oH. If methyl alcohol boils at 84oH, what is its boiling point on the Jekyll scale?

 J H

 384 135 84oH above the freezing point of water

$$\left(84°H\right)\left(\frac{342°J}{135°H}\right)=213°Jabove freezing point of water$$

213oJ + 42oJ = 255oJ

 42 0

1. (4 points) Determine the number of protons, neutrons, and electrons and mass number for a 61V+3 ion.

23 protons

38 neutrons

20 electrons

Chemistry 141 Name Key

Dr. Cary Willard

Quiz 1B (20 points) February 2, 2010

1. (5 points) A sunscreen preparation contains 3.90% by mass benzyl salicylate. If a tube contains 4.0 oz of sunscreen, how many kilograms of benzyl salicylate are needed to manufacture 325 tubes of sunscreen?

$$?kg BS=325 tube ss×\frac{4 oz ss}{1 tube ss}×\frac{1 lb ss}{16 oz ss}×\frac{454 g ss}{1 lb ss}×\frac{3.90 g BS}{100 g ss}×\frac{1 kg BS}{1000 g BS}=1.4 kg BS$$

1. (5 points) The density of titanium is 4.51 g/cm3. What is the volume in cubic inches of 4.5 lb of titanium?

$$? in^{3}Ti=4.5 lb Ti×\frac{454 g Ti}{1 lb Ti}×\frac{1 cm^{3}Ti}{4.51 g Ti}×\left(\frac{1 in}{2.54 cm}\right)^{3}=28 in^{3}Ti$$

1. (6 points) On a new Jekyll temperature scale, water freezes at 38oJ and boils at 284 oJ. On another new temperature scale, the Hyde scale, water freezes at 0oH and boils at 135oH. If methyl alcohol boils at 84oH, what is its boiling point on the Jekyll scale?

 J H

 284 135 84oH above the freezing point of water

$$\left(84°H\right)\left(\frac{246°J}{135°H}\right)=153°Jabove freezing point of water$$

153oJ + 38oJ = 191oJ

 38 0

1. (4 points) Determine the number of protons, neutrons, and electrons and mass number for a 64Mn+6 ion.

25 protons

39 neutrons

19 electrons