

September 8, 2000
Fall 2000
Isom

EXAM 1A
Physiological Chemistry I / CHEM 1402

Name: _____

ss#: _____

Lab: **A** (mon) **B** (wed)

Multiple Choice. Clearly write the letter corresponding to the correct answer in the space provided. (4 points)

___1) If the patient's actual weight is 152 lbs (true value), then which terms correctly describe the following set of weight measurements?

225 lbs, 226 lbs, 224 lbs, 225 lbs

- (a) accurate but not precise (b) accurate and precise (c) not accurate but precise
(d) not accurate and not precise (e) none of the above

___2) Thermometers in other countries often measure body temperature in celsius instead of fahrenheit. A nurse using one of these thermometers determines a patient's temperature to be 39.2 °C. What is this patient's temperature in fahrenheit?

- (a) 4 °F (b) 102.5 °F (c) 70.5 °F (d) 100.4 °F (e) none of the above

___3) The specific gravity of a patient's urine sample was measured as 1.008. Given that the density of water is 1.000 g/mL, what is the density of the urine sample?

- (a) 0.9920 g/mL (b) 1.008 X 10⁻³ g/L (c) 1.008 g/mL
(d) can't determine from the information given (e) none of the above

___4) Which is/are true if two liquid compounds (A and B) have the following densities:

compound **A** = 1.55 g/mL compound **B** = 2.98 g/mL

- (I) A 2.37 mL sample of **A** will have more mass than a two mL sample of **B**
(II) A 6.35 mL sample of **A** will have more mass than a two mL sample of **B**
(III) A sample of **A** will always have less mass than a sample of **B** with equal volume.
(IV) A sample of **A** will always have less volume than a sample of **B** with equal mass.

- (a) I, II, III, IV (b) III and IV (c) I, II and IV (d) III only
(e) can't be determined from the information given

___5) The concentration of a solution is 0.80 g/L. What is the concentration of this solution in mg/mL?

- (a) 0.80 mg/mL (b) 800 mg/mL (c) 0.00080 mg/mL
(d) .040 mg/mL (e) none of the above

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___6) Mice with an inactivated HMGI-C (fat) gene

- (a) gained more weight than the mice with an active fat gene
- (b) gained less weight than the mice with an active fat gene
- (c) gained the same amount of weight as mice with an active fat gene
- (d) ate less than mice with an active fat gene
- (e) none of the above

___7) Which of the following is/are examples of chemical changes?

- I. Gasoline evaporates from an open gas can
- II. Water vapor forms water droplets on the outside of a glass of ice tea
- III. A lawn grows thicker after being fertilized and watered
- IV. Sheep are sheered and the wool is spun into yarn

- (a) I, II, III, IV
- (b) III and IV
- (c) II, III and IV
- (d) III only
- (e) none of the above

___8) Which of the following will have the highest ionization energy?

- (a) Na
- (b) K
- (c) N
- (d) Cl
- (e) can't determine from the information given

___9) The name of the element whose symbol is S

- (a) Sodium
- (b) Silicon
- (c) Selenium
- (d) Silver
- (e) none of the above

___10) How many electrons does potassium have in its valence shell?

- (a) 5
- (b) 2
- (c) 8
- (d) 1
- (e) can't determine from information given

___11) Which of the following is/are true of the following isotope?



- (a) it has 52 protons
- (b) it has 69 neutrons
- (c) its mass number is 121
- (d) it has 52 electrons
- (e) all of the above

___12) How many neutrons does the following isotope have?



- (a) 15
- (b) 31
- (c) 16
- (d) 46
- (e) none of the above

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- ___13) 2500 Calories (food) is equivalent to how many calories?
(remember: 1 Calorie = 1 kilocalorie)
- (a) 2.5×10^6 cal (b) 2.5×10^3 cal (c) 2.5×10^{-6} cal (d) 2.5×10^{-3} cal
(e) none of the above
- ___14) How many valence electrons do the noble gases have?
- (a) 6 (b) 8 (c) 2 (d) it depends on which period they are in
(e) none of the above
- ___15) Which of the following elements has the highest electron affinity?
- (a) Br (b) F (c) N (d) Li
(e) can't be determined from the information given
- ___16) An instrument in a doctor's office measures the concentration of glucose in a patient's blood sample. Multiple measurements are obtained from the same blood sample. Which of the following statements is/are true of the measurements below?
- 125.2 mg/mL, 175.9 mg/mL, 256.1 mg/mL, 100 mg/mL
- I. The instrument is capable of precise measurements
II. The measurements are not precise
III. The instrument is capable of accurate measurements
IV. The patient should find another doctor with decent equipment
- (a) II and IV (b) I, III and IV (c) I and III (d) II, III and IV
(e) none of the above
- ___17) How many p-orbitals are in a p subshell?
- (a) 3 (b) 2 (c) 6 (d) 5 (e) none of the above
- ___18) The valence shell electron configuration given below corresponds to which element?
- $3s^23p^2$
- (a) Mg (b) Al (c) Ge (d) Si (e) none of the above
- ___19) Which of the following valence shell electron configurations represents the most stable element (ie. valence shell is full) of the choices given below?
- (a) $3s^23p^6$ (b) $2s^2$ (c) $3s^23p^4$ (d) $1s^1$
(e) cant determine from the information given
- ___20) The doctor orders 150 mg of a drug to be injected into a patient. The bottle containing the drug is labeled 165 g/L. How many mL of drug should you inject into the patient?
- (a) 9.0 mL (b) 0.90 mL (c) 90 mL (d) 909 mL (e) none of the above

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21)(5 points) In the space below, CLEARLY write the **total** electron configuration for the element silver.

Calculation problems. For credit you must **SHOW YOUR WORK!** Clearly circle your final answers. Your answer should include the appropriate units.

21) Each Tylenol chewable tablet contains 95 mg of acetaminophen. The recommended dose for children is 10 mg/kg of body weight. How many tablets constitute a proper dosage for a 45 lb child? (1kg = 2.205 lb)

22) You're driving a car traveling 33.5 m/s while munching some fries when you spot a policeman with radar on the side of the road ahead. You notice a speed limit sign that reads 60 miles/hr. Should you slow down? Don't forget to show all of your work.
(useful conversion factors: 1 mile = 5280 feet, 1 m = 39.37 inches)

23) Write the number of significant figures in the space next to the measurements below:

a) _____ 25000 b) _____ 1.29×10^6 c) _____ 0.005200

d) _____ 1.500×10^{-5} e) _____ 1000.0