PSU Chem 101 Term-241 Midterm

Mr. Abdullah Mohamed

@Chem31Phys

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خاص بالمشتركين فقط

PSU (Chem101)

Term-241

Midterm

Qustion1: (13.5 points each 0.75) Choose the best answer:

- 1. An empty container has a mass of 12.333 g After being filled with gas, the mass increased to 12.543 g. Calculate twice the mass of the gas added to the container. (apply the rules of significant figures).
 - A) 0.21 g
 - B) $0.210 \, g$
 - *C*) 04 g
 - D) 0.420 g
- 2. How would you describe the relation of the following hits in terms of accuracy and precision:
 - 1) Accurate but not precise
 - 2) Precise but not accurate
 - 3) Both accurate and precise
 - 4) Neither accurate nor accurate,
- 3. What type of chemical bond is formed by the sharing of electrons between two atoms?
 - A) Covalent bond
 - B) Ionic bond
 - C) Physical bond
 - D) All the above4.
- 4. The heavy components of an atom are:
 - A) Protons and electrons
 - B) Neutrons and electrons
 - C) Protons
 - *D)* protons and neutrons

- 5. The formula of ionic compound resulted from the combination of mercury (1) and bromine is?
 - A) Hg_2Br_2 .
 - B) HgBr
 - C) HgBr
 - $D) Hg_2Br$
- 6. Which of the following is an isotope of ³²S?
 - $A) \ ^{32}S^{-}$
 - $B)^{32}S^{-2}$
 - $C)^{31}P$
 - $D)^{34}S$
- 7. The name of $Mg(OH)_2$ is?
 - A) Magnesium (II) hydroxide
 - B) Magnesium hydroxide
 - C) Magnesium dihydroxide
 - D) Mono magnesium dihydroxide
- 8. An unknown element (X^+) has the mass number of 226 and contains 87 electrons, determine the number of neutrons?
 - A) 138
 - B) 139
 - C) 137
 - D) 88

- 9. Which of the following is expected to behave as weak electrolyte?
 - A) Ethanol (C_2H_5OH)
 - B) Carbonic acid (H_2CO_3)
 - C) Barium sulphate (BaSO₄)
 - D) Ammonium sulphate, $(NH_4)_2SO_4$.
- 10. Which of the following is the correct unit of molarity?
 - A) mol/L
 - B) g/L
 - *C) L/mo*
 - D) g/mol
- 11. Water is widely used as a solvent for a variety of ionic compounds because it is:
 - A) Polar solvent
 - B) Nonpolar solvent
 - C) Pure solvent
 - D) Ionic solvent
- 12. You are given the following equation:

$$A + 2B \rightarrow 3C + D = 5$$

If the mass of A = 1g, mass of B = 5g, and mass of C = 2g, Determine the mass D:

- A) 5 g
- B) 4 g
- C) 6 g
- D) 1 g

13. The empirical formula of Cl_2O_5 is

- A) Cl O_{2.5}
- B) Cl_4O_{10}
- *C*) *Cl*₂*O*₅
- D) None of the above

14. The value of 15 m in nanometer (nm) is:

- *A)* $1.5 \times 10^9 nm$
- B) $1.5 \times 10^{-9} nm$
- C) $1.5 \times 10^{10} nm$
- *D)* $1.5 \times 10^{-10} nm$

15. A substance has the molar mass of 44 g/mol, which of the following material(s) could represent a possible structure of this substance:

- $A) CO_2$
- B) N_2O
- $C) NO_2$
- D) A and B

16. Which of the following elements is classified as an alkaline earth metal?

- *A) C*
- B) Na
- C) Ca
- D) Fe

- 17. What is the common factor between H_2SO_4 and HCI?
 - A) Both are strong bases
 - *B)* Both are weak bases
 - C) Both are strong acids
 - D) Both are weak acids
- 18. To balance a chemical equation, it is allowed to change:
 - A) The subscripts of the substances
 - B) The coefficients of the substances
 - C) Both the subscripts and the coefficients
 - D) The chemical formulas of the substances
- Question 4: Answer the following questions and provide a detailed solution showing all steps

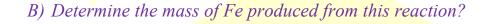
 1) If 873 g of FeI₃ is dissolved in enough water to make 0.6 M, determine the volume of this solution.

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2) Iron (III) oxide reacts with carbon to produce Iron and carbon dioxide according to the following BALANCED equation:

$$2Fe_2O_3(s) + 3C(s) \rightarrow 4Fe(s) + 3CO_2(g)$$

A) If 79.9 g of Fe_2O_3 reacted with 14 g of C, indicate the limiting reactant (show the details of your calculations)?



3) Complete and balance the following precipitation reaction:
$$(97-136-593-31-2018$$

$$Li_2SO_4(aq) + AgNO_3(aq) \rightarrow \dots + \dots + \dots + \dots$$

- 4) Answer the following questions concerning a 100 g sample of SO₃
 - A) Determine precent composition by mass of Sulfur (S) in sulfur dioxide SO_3 is?

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B) Determine the number of molecules of SO3 in this sample



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