

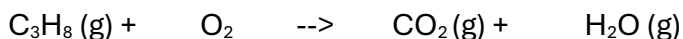
Final Exam Test Questions Review

1. Which type of matter can be separated into its parts using physical methods like filtration or settling?
 - a. Elements
 - b. Compounds
 - c. Heterogenous mixture
 - d. Homogenous mixture
 - e. Solutions
2. Which of the following are chemical processes?
 - a. Compression of oxygen gas
 - b. Freezing of water
 - c. Melting of butter
 - d. Rusting of a nail
3. In which one of the following are all the zeroes significant?
 - a. 0.15632
 - b. 0.1000
 - c. 00.0030020
 - d. 0.083624
 - e. 100.090090
4. There are _____ electrons _____ protons, and _____ neutrons in an atom of $^{132}_{54}\text{Xe}$
 - a. 132,132,54
 - b. 54,54,132
 - c. 78,78,54
 - d. 54, 54, 78
 - e. 78, 78, 132
5. Element Z has two naturally occurring isotopes:
Z-63 with a mass of 62.93 amu and a natural abundance of 69.17%
Z-65 with a mass of 64.93 amu and a natural abundance of 30.83%
Calculate the average atomic mass of element

6. Which formula/name pair is incorrect?

- a. $\text{Mn}(\text{NO}_2)_2$ manganese (II) nitrite
- b. $\text{Mg}(\text{NO}_3)_2$ magnesium nitrate
- c. $\text{Mn}(\text{NO}_3)_2$ magnesium nitrite
- d. Mg_3N_2 magnesium permanganate

7. The combustion of propane (C_3H_8) in the presence of excess oxygen fields CO_2 and H_2O :



When 2.5 mol of O_2 are consumed in their reaction, _____ mol of CO_2 are produced?

8. An aqueous ethanol solution (400 ml) was diluted to 4.00 L, giving a concentration of 0.0400 M. The concentration of the original solution was _____ M.

- a. 0.400 M
- b. 0.200 M
- c. 2.00 M
- d. 4.00 M

9. A chemical reaction that absorbs heat from the surroundings is said to be _____ and has a _____ ΔH at constant temperature.

- a. Exothermic, neutral
- b. Exothermic, positive
- c. Endothermic, negative
- d. Endothermic, positive

10. True or false: The ground state electron of Cu is $[\text{Ar}] 4s^1 3d^{10}$

11. The value of ΔH for the reaction below is -790 KJ . The enthalpy change accompanying the reaction of 0.95 g of S is _____ KJ .
- $2 \text{ S (s)} + 3 \text{ O}_2 \text{ (g)} \rightarrow 2 \text{ SO}_3 \text{ (g)}$
- 23 KJ
 - -23 KJ
 - 12 KJ
 - -12 KJ
12. The wavelength of light has a frequency of $1.66 \times 10^9 \text{ s}^{-1}$ is _____ m .
- 6.63 m
 - 0.182 m
 - $2.00 \times 10^{-9} \text{ m}$
 - $5.53 \times 10^8 \text{ m}$
13. In general, as you go across a period in the periodic table from left to right:
- The atomic radius _____
 - The electron affinity becomes _____ negative
 - The first ionization energy _____
14. Which of the following would have to lose two electrons in order to achieve a noble gas electron configuration? **O** **Sr** **Na** **Se** **Br**
15. Arrange the following gases in order of increasing average molecular speed at 25°C
 He , O_2 , CO_2 , N_2
16. A sample of a gas originally at 29°C and 1.25 atm pressure in a 3.0 L container is allowed to contract until the volume is 2.2 L and the temperature is 11°C . The final pressure of the gas is _____ atm .
17. The strongest interparticle attractions (IMFs) exist between particles of a _____, and the weakest interparticle attractions exist between particles of a _____.

18. True or false: All molecules experience London Dispersion forces.

19. Of the following substances, _____ has the highest boiling point.

- a. O_2
- b. Cl_2
- c. N_2
- d. Br_2

20. What is the formal charge of nitrogen in NO_3^- ? Draw the Lewis structure

21. True or false: A volatile liquid is one that is highly viscous.

22. On the phase diagram shown below, segment _____ corresponds to the conditions of temperature and pressure under which the solid and the gas of the substance are in equilibrium

