

Houston Community College System HCCS

Fall Semester 2018

General Chemistry I (CHEM 1311)

Exam I

Time: 1 Hour

Student Name: _____ Student ID # _____

Instructor: Dr. Emad Akeer

100 Points

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

4 Points each

- 1) Gases and liquids share the property of _____. 1) _____
A) definite volume
B) incompressibility
C) definite shape
D) compressibility
E) indefinite shape
- 2) Of the following, only _____ is an extensive property. 2) _____
A) mass
B) density
C) boiling point
D) temperature
E) freezing point
- 3) Which one of the following is true about the liter? 3) _____
A) It is equivalent to a cubic decimeter.
B) It is slightly smaller than a quart.
C) It is the SI base unit for volume.
D) It contains 10^6 cubic centimeters.
E) It is slightly smaller than a gallon.
- 4) In which one of the following numbers are all of the zeros significant? 4) _____
A) 00.0030020
B) 0.1000
C) 0.143290
D) 100.090090
E) 0.05843
- 5) Round the number 3456.5 to two significant figures. 5) _____
A) 3000 B) 3400.0 C) 3000.0 D) 3400 E) 3500

- 6) Of the following, the smallest and lightest subatomic particle is the _____. 6) _____
- A) electron
 - B) neutron
 - C) alpha particle
 - D) proton
 - E) nucleus
- 7) Isotopes are atoms that have the same number of _____ but differing number of _____. 7) _____
- A) electrons, protons
 - B) protons, neutrons
 - C) protons, electrons
 - D) neutrons, electrons
 - E) neutrons, protons
- 8) In the symbol shown below, x = _____. 8) _____
- $${}^x_{13}\text{C}$$
- A) 7
 - B) 6
 - C) 13
 - D) 12
 - E) not enough information to determine
- 9) There are _____ protons, _____ neutrons, and _____ electrons in ${}^{131}\text{I}^-$. 9) _____
- A) 131, 53, and 54
 - B) 78, 53, and 72
 - C) 131, 53, and 52
 - D) 53, 78, and 54
 - E) 53, 131, and 52
- 10) Which formula/name pair is incorrect? 10) _____
- A) $\text{Mg}(\text{NO}_3)_2$ magnesium nitrate
 - B) Mg_3N_2 magnesium nitrite
 - C) $\text{Mn}(\text{NO}_2)_2$ manganese(II) nitrite
 - D) $\text{Mg}(\text{MnO}_4)_2$ magnesium permanganate
 - E) $\text{Mn}(\text{NO}_3)_2$ manganese(II) nitrate
- 11) Which one of the following compounds is chromium(III) oxide? 11) _____
- A) Cr_2O_4
 - B) Cr_2O_3
 - C) Cr_3O
 - D) Cr_3O_2
 - E) CrO_3
- 12) When a hydrocarbon burns in air, what component of air reacts? 12) _____
- A) water
 - B) oxygen
 - C) nitrogen
 - D) argon
 - E) carbon dioxide

- 13) Of the reactions below, which one is a decomposition reaction? 13) _____
- A) $\text{NH}_4\text{Cl} \rightarrow \text{NH}_3 + \text{HCl}$
 B) $\text{Cd}(\text{NO}_3)_2 + \text{Na}_2\text{S} \rightarrow \text{CdS} + 2\text{NaNO}_3$
 C) $2\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
 D) $2\text{CH}_4 + 4\text{O}_2 \rightarrow 2\text{CO}_2 + 4\text{H}_2\text{O}$
 E) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
- 14) The formula weight of potassium phosphate (K_3PO_4) is _____ amu. 14) _____
- A) 212.27 B) 86.07 C) 251.37 D) 196.27 E) 173.17
- 15) The mass % of H in methane (CH_4) is _____. 15) _____
- A) 92.26 B) 7.743 C) 25.13 D) 74.87 E) 4.032

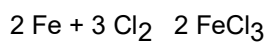
You must show your calculations and units clearly for credit or partial credit. You must show your calculations and units clearly for credit or partial credit.

- 16) The element X has three naturally occurring isotopes. The isotopic masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu. 16) _____

Isotope	Abundance	Mass
^{53}X	19.61	52.62
^{56}X	53.91	56.29
^{58}X	26.48	58.31

17) 10.0 g of iron and 20.0 g of chlorine react as shown below,

17) _____



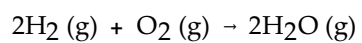
What is the theoretical yield of FeCl_3 ?

18) Ethanol contains 52.2% carbon, 13.0% hydrogen, and 34.8% oxygen by mass. What is the empirical formula of ethanol?

18) _____

19) Water can be formed from the stoichiometric reaction of hydrogen with oxygen:

19) _____



A complete reaction of 5.0 g of O_2 with excess hydrogen produces _____ g of H_2O .

Answer Key

Testname: CHEM1411 EXAM 1

- 1) E
- 2) A
- 3) A
- 4) D
- 5) E
- 6) A
- 7) B
- 8) B
- 9) D
- 10) B
- 11) B
- 12) B
- 13) A
- 14) A
- 15) C
- 16)
- 17)
- 18)
- 19) 5.6