Taibah University

Deanery of Academic Services

Unified Scientific Track

CHEM 101 - Quiz No. 1 - Exam Info (2nd Sem, 1441)

- Exam date: Tuesday 18th of February, 2020
- Exam time: as announced in each campus
- Campuses: all (M & F)
- Chapters included: 1 and 2 (Topics 01 – 06 only)
- Allowed Time: 75 min
- Number of questions: 25 MCQ's (Electronic)
- Marks: 25 (of a total of 100)
- Scientific calculator: allowed
- Translation aid: not allowed
- Periodic table & suppl. data: provided

Mock Test For

Quiz No. 1

Introduction To Chemistry (CHEM 101)

(Chapters 1 & 2)

(Topics 01 – 06, Topic 07 is excluded)

For

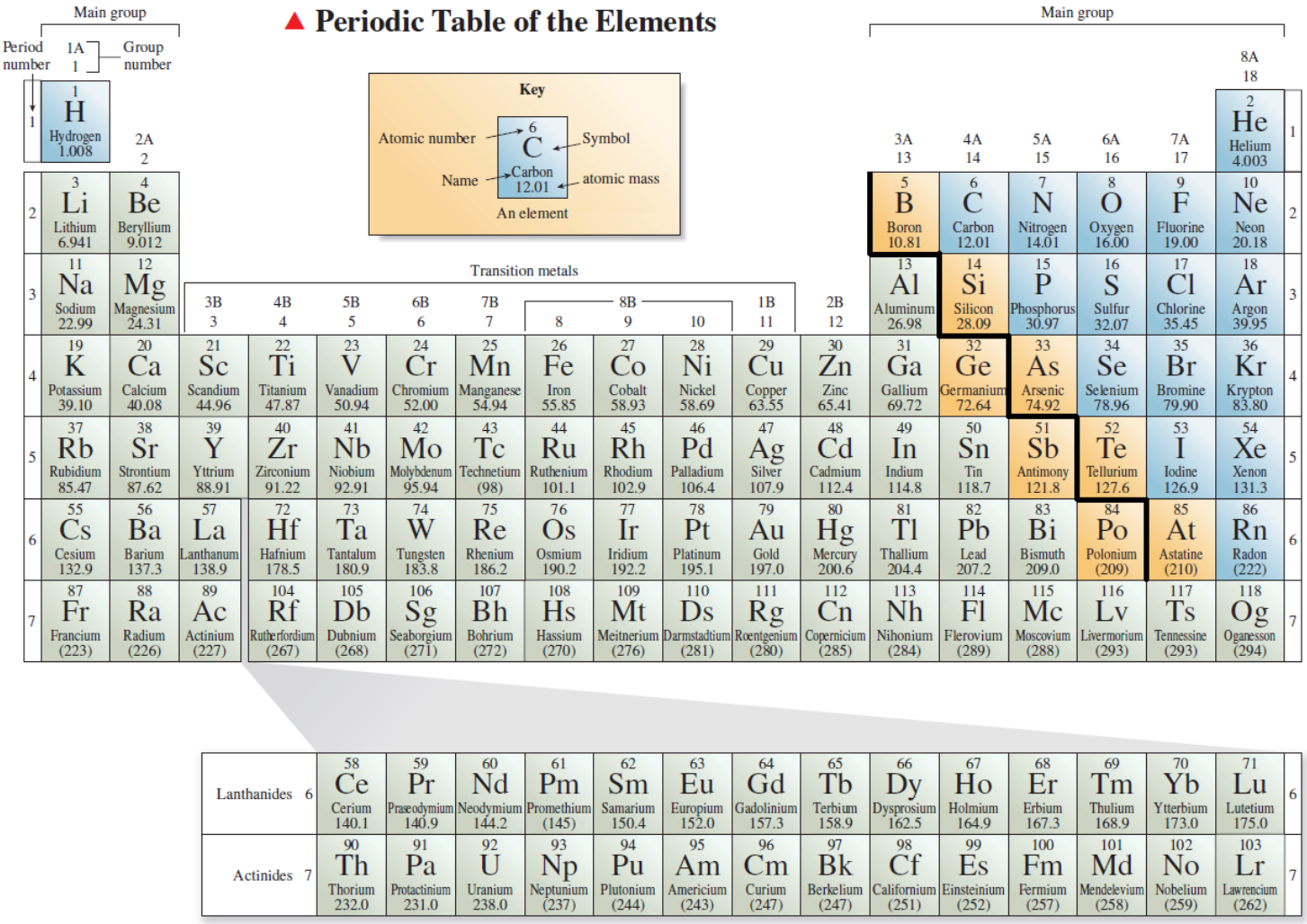
Unified Scientific Track Students

(All Campuses)

2nd Semester

1441 | 2019 – 2020

▲ Periodic Table of the Elements



▲ CHEM 101 Supplemental Information

$d = \frac{m}{V}$	$°C = \frac{(°F - 32)}{1.8}$	$°F = 1.8\,(°C) + 32$	$°C = K - 273$	$K = (°C) + 273$
$M = \frac{n}{V}$	$M_1V_1 = M_2V_2$	$K_W = [H_3O^+] \times [OH^-] = 1 \times 10^{-14}$		$pH = -\log [H_3O^+]$
Molecular formula = empirical formula $\times\ n$ $n = \frac{\text{molar mass of molecular formula}}{\text{molar mass of empirical formula}}$		$\%\text{ mass of element X} = \frac{\text{mass of element X in 1 mol of compound}}{\text{mass of 1 mol of the compound}} \times 100\%$		$\%\ yield = \frac{\text{actual yield}}{\text{theoretical yield}}\ X\ 100$
$q = C \times \Delta T$	$w = -P\Delta V$	$q = m \times C_s \times \Delta T$	$1\ L.atm = 101.3\ J$	Avogadro's No. $= 6.022 \times 10^{23}$
Atomic mass $= \sum_n$ (fraction of isotope n) $\times$ (mass of isotope n) = (fraction of isotope 1 $\times$ mass of isotope 1) + (fraction of isotope 2 $\times$ mass of isotope 2) + ⋯		**Mole Conversions:** Grams of Substance ⇄ (÷ Molar Mass / × Molar Mass) Moles of Substance ⇄ (× Avo. Number / ÷ Avo. Number) Number of Atoms or Molecules		

Choose The Most Correct Answer:

1. From the following items, only ……. is NOT matter.

❑ a. heat ❑ b. dust ❑ c. air ❑ d. sun

2. Which of the following is a pure substance?

❑ a. wood ❑ b. beef stew ❑ c. dry ice ❑ d. apple juice

3. Which of the following which is NOT a pure substance?

❑ a. sugar ❑ b. water ❑ c. ethanol ❑ d. air

4. In the ……. state, matter has no specific shape but does have a specific volume?

❑ a. gaseous ❑ b. solid ❑ c. liquid ❑ d. salts

5. Deposition is process in which a …….. changes into a ……

❑ a. solid, gas ❑ b. gas, solid ❑ c. gas, liquid ❑ d. liquid, solid

6. Among the following substances, the one that is not a compound is ……..

❑ a. H_2O ❑ b. CO_2 ❑ c. MnO_2 ❑ d. Cl_2

7. A combination of sand, salt, and water is an example for a ……

❑ a. homogeneous mixture ❑ b. heterogeneous mixture

❑ c. compound ❑ d. pure substance

8. Which of the following does NOT have a uniform composition throughout?

❑ a. pure substance ❑ b. heterogeneous mixture

❑ c. homogeneous mixture ❑ d. both homogeneous and heterogeneous mixtures

9. Which of the following is a physical observation (property)?

❑ a. burns in oxygen ❑ b. forms a precipitate

❑ c. melts at 76 °C ❑ d. decomposes by heat

10. Which of the following is a chemical process (chemical change)?

❑ a. filtering sand from water ❑ b. removing salt from sea water

❑ c. dissolving coffee in water ❑ d. decomposing water into H_2 and O_2

11. Which of the following is NOT a unit in the SI system of units?

❑ a. Kilogram ❑ b. Second ❑ c. Inch ❑ d. Meter

12. The standard SI unit for temperature measurements is ……...

❑ a. Fahrenheit ❑ b. Celsius ❑ c. Quart ❑ d. Kelvin

13. Many home freezers maintain a temperature of 0 °F. Express this temperature in Celsius degrees.

❑ a. –32.5 °C ❑ b. –17.8 °C ❑ c. –10.4 °C ❑ d. 0 °C

14. Ethanol boils at 173.1 °F. This temperature equals …… K.

❑ a. 337.4 ❑ b. 351.5 ❑ c. 387.1 ❑ d. 401.4

15. The SI prefixes *mega* and *micro* represent ……., respectively.

❑ a. 10^{6} and 10^{-6} ❑ b. 10^{-6} and 10^{6} ❑ c. 10^{3} and 10^{-6} ❑ d. 10^{6} and 10^{-3}

16. A volume of 10 mL is equal to ……..

❑ a. 10^{-3} L ❑ b. 10 cm^3 ❑ c. 10^{-1} L ❑ d. 0.01 m^3

17. How many micrometers are there in 0.35 km?

❑ a. 3.5×10^{-8} ❑ b. 3.5×10^{6} ❑ c. 3.5×10^{8} ❑ d. 3.5×10^{9}

18. …… is the prefix multiplier used to represent the factor 10^{-9}.

❑ a. pico ❑ b. nano ❑ c. micro ❑ a. Giga

19. The density of gold is 19.31 g.cm^{-3}. What is the volume (in cm^3) of a piece of gold weighing 294 g?

❑ a. 5.67 x 10^3 ❑ b. 15.2 ❑ c. 0.0657 ❑ d. 5677

20. Who in 1909 measured the charge on the electron?

❑ a. E. Rutherford ❑ b. R. Millikan ❑ c. J. Dalton ❑ d. J.J. Thomson

21. Which of the following has the element name and symbol correctly matching?

❑ a. Potassium, P ❑ b. Copper, Cr ❑ c. Magnesium, Mn ❑ d. Silver, Ag

22. Which of the following determines the identity of an element's atom?

❑ a. number of protons ❑ b. number of electrons

❑ c. number of neutrons ❑ d. total number of protons and neutrons

23. The most abundant isotope of cupper is $^{63}_{29}Cu$. How many protons, neutrons, and electrons does this atom have, respectively?

❑ a. 63, 29, 29 ❑ b, 34, 29, 36 ❑ c. 29, 29, 34 ❑ d. 29, 34, 29

24. Which of the following elements is an alkaline earth metal?

❑ a. Li ❑ b. Ca ❑ c. Fe ❑ d. Ge

25. Anions are formed when atoms …….

❑ a. gain electrons ❑ c. lose protons ❑ b. gain neutrons ❑ d. lose electrons

26. Which of the following is FALSE about a neutron?

❑ a. It has a positive charge ❑ b. It is much more masse than an electron

❑ c. It is neutral ❑ d. It is often associated with protons

27. The charge of the ion formed by calcium is ……..

❑ a. -2 ❑ b. +1 ❑ c. +2 ❑ d. +3

28. Which one of the following elements is most likely to form a -2 ion?

❑ a. Beryllium ❑ b. Silicon ❑ c. Selenium ❑ d. Strontium

29. The sublevel ……. never exists in any atom.

❑ a. 2s ❑ b. 1p ❑ c. 3p ❑ d. 5d

30. How many valence electrons are there in an atom with an atomic number of 17?

❑ a. 1 ❑ b. 5 ❑ c. 7 ❑ d. 17

31. Which of the following is the correct electron configuration for bromine, Br?

❑ a. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 4d^{10}\ 4p^5$ ❑ b. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^5$

❑ c. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^6$ ❑ d. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 4p^6$

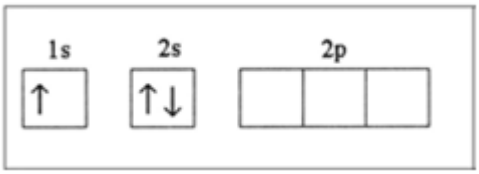
32. The electron configuration of "Ne" is ……...

❑ a. $1s^2\ 2s^2\ 2p^5$ ❑ b. $1s^2\ 2s^2\ 2p^3$

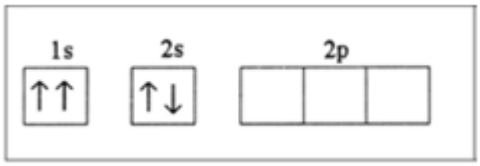
❑ c. $1s^2\ 2s^2\ 2p^6$ ❑ d. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2$

33. Which of the following electron configurations is representing a <u>violation</u> for Hund's rule for an atom in its ground state?

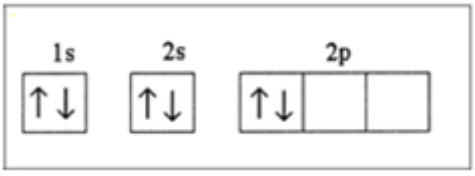
❑ a.



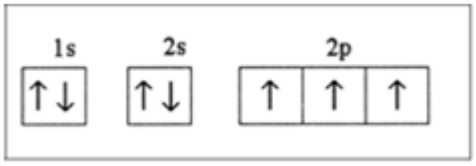
❑ b.



❑ c.



❑ d.



Best Wishes

Al-Madinah, 10th of February, 2020