



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

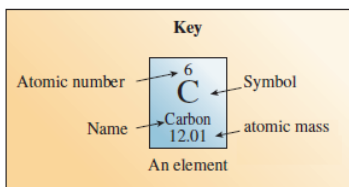
(All Campuses)

2nd Semester

1441 | 2019 – 2020

▲ Periodic Table of the Elements

Period number	Main group	
	1A 1	Group number 2A 2
1	1 H Hydrogen 1.008	



Main group						8A 18
3A 13	4A 14	5A 15	6A 16	7A 17	8A 18	1 2 3 4 5 6 7
5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18	
13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95	
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	
55 Cs Cesium 132.9	56 Ba Barium 137.3	57 La Lanthanum 138.9	72 Hf Hafnium 178.5	73 Ta Tantalum 180.9	74 W Tungsten 183.8	
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (267)	105 Db Dubnium (268)	106 Sg Seaborgium (271)	

Transition metals										2B 12	
3B 3	4B 4	5B 5	6B 6	7B 7	8B 8 9 10			1B 11	2B 12		
25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.41	31 Ga Gallium 69.72	32 Ge Germanium 72.64	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80
43 Tc Technetium (98)	44 Ru Ruthenium 101.1	45 Rh Rhodium 102.9	46 Pd Palladium 106.4	47 Ag Silver 107.9	48 Cd Cadmium 112.4	49 In Indium 114.8	50 Sn Tin 118.7	51 Sb Antimony 121.8	52 Te Tellurium 127.6	53 I Iodine 126.9	54 Xe Xenon 131.3
75 Re Rhenium 186.2	76 Os Osmium 190.2	77 Ir Iridium 192.2	78 Pt Platinum 195.1	79 Au Gold 197.0	80 Hg Mercury 200.6	81 Tl Thallium 204.4	82 Pb Lead 207.2	83 Bi Bismuth 209.0	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
107 Bh Bohrium (272)	108 Hs Hassium (270)	109 Mt Meitnerium (276)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (280)	112 Cn Copernicium (285)	113 Nh Nihonium (284)	114 Fl Flerovium (289)	115 Mc Moscovium (288)	116 Lv Livermorium (293)	117 Ts Tennessine (293)	118 Og Oganesson (294)

Lanthanides 6	58 Ce Cerium 140.1	59 Pr Praseodymium 140.9	60 Nd Neodymium 144.2	61 Pm Promethium (145)	62 Sm Samarium 150.4	63 Eu Europium 152.0	64 Gd Gadolinium 157.3	65 Tb Terbium 158.9	66 Dy Dysprosium 162.5	67 Ho Holmium 164.9	68 Er Erbium 167.3	69 Tm Thulium 168.9	70 Yb Ytterbium 173.0	71 Lu Lutetium 175.0
Actinides 7	90 Th Thorium 232.0	91 Pa Protactinium 231.0	92 U Uranium 238.0	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

▲ CHEM 101 Supplemental Information

$d = \frac{m}{V}$	$^{\circ}\text{C} = \frac{(^{\circ}\text{F} - 32)}{1.8}$	$^{\circ}\text{F} = 1.8 (^{\circ}\text{C}) + 32$	$^{\circ}\text{C} = K - 273$	$K = (^{\circ}\text{C}) + 273$										
$M = \frac{n}{V}$	$M_1 V_1 = M_2 V_2$	$K_w = [\text{H}_3\text{O}^+] \times [\text{OH}^-] = 1 \times 10^{-14}$		$\text{pH} = -\log [\text{H}_3\text{O}^+]$										
Molecular formula = empirical formula $\times n$ $n = \frac{\text{molar mass of molecular formula}}{\text{molar mass of empirical formula}}$		% mass of element X = $\frac{\text{mass of element X in 1 mol of compound}}{\text{mass of 1 mol of the compound}} \times 100\%$		$\% \text{ yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100$										
$q = C \times \Delta T$	$w = -P\Delta V$	$q = m \times C_s \times \Delta T$	1 L.atm = 101.3 J											
Atomic mass = $\sum_n (\text{fraction of isotope } n) \times (\text{mass of isotope } n)$ = (fraction of isotope 1 \times mass of isotope 1) + (fraction of isotope 2 \times mass of isotope 2) + ...		Mole Conversions: <table style="margin: auto; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px;">Grams of Substance</td> <td style="padding: 0 10px;">\div Molar Mass</td> <td style="border: 1px solid black; padding: 5px;">Moles of Substance</td> <td style="padding: 0 10px;">\times Avo. Number</td> <td style="border: 1px solid black; padding: 5px;">Number of Atoms or Molecules</td> </tr> <tr> <td></td> <td style="padding: 0 10px;">\times Molar Mass</td> <td></td> <td style="padding: 0 10px;">\div Avo. Number</td> <td></td> </tr> </table>			Grams of Substance	\div Molar Mass	Moles of Substance	\times Avo. Number	Number of Atoms or Molecules		\times Molar Mass		\div Avo. Number	
Grams of Substance	\div Molar Mass	Moles of Substance	\times Avo. Number	Number of Atoms or Molecules										
	\times Molar Mass		\div Avo. Number											

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. H₂O b. CO₂ c. MnO₂ d. Cl₂

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 H₂ and O₂

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. 10⁶ and 10⁻⁶ b. 10⁻⁶ and 10⁶ c. 10³ and 10⁻⁶ d. 10⁶ and 10⁻³

16. A volume of 10 mL is equal to

- a. 10⁻³ L b. 10 cm³ c. 10⁻¹ L d. 0.01 m³

17. How many micrometers are there in 0.35 km?

- a. 3.5 x 10⁻⁸ b. 3.5 x 10⁶ c. 3.5 x 10⁸ d. 3.5 x 10⁹

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 $19.31 \text{ g}\cdot\text{cm}^{-3}$. What is the volume (in cm^3) of a piece of gold weighing 294 g?

- a. 5.67×10^3 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 copper is ${}^{63}_{29}\text{Cu}$. 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 massive 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

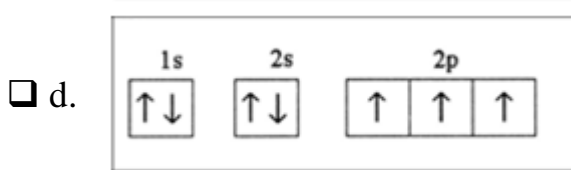
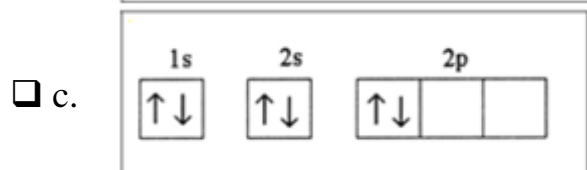
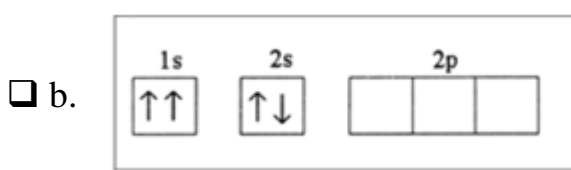
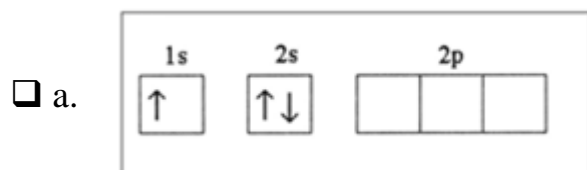
31. Which of the following is the correct electron configuration for bromine, Br?

- 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 violation for Hund's rule for an atom in its ground state?



Best Wishes

Al-Madinah, 10th of February, 2020