

(CHEM 101)

First SEMESTER

MID-TERM EXAM

(1442 H) (2020-2021 G)



COLLEGE OF SCIENCE
Chemistry Department

الاسم:	Write your answer in the table below			
	Q1:	Q6:	Q11:	Q16:
الرقم الجامعي:	Q2:	Q7:	Q12:	Q17:
رقم الشعبة:	Q3:	Q8:	Q13:	Q18:
Sunday 15/03/1442 H	Q4:	Q9:	Q14:	Q19:
07:00-09:00 PM	Q5:	Q10:	Q15:	Q20:
Time allowed: 120 minutes				

IA 1	2 IIA	3 IIIB	4 IVB	5 VB	6 VIB	7 VIIB	8	9 VIIB	10	11 IB	12 IIB	13 IIIA	14 IVA	15 VA	16 VIA	17 VIIA	VIIIA 2
H 1.008	He 4.003																
Li 6.94	Be 9.01											B 10.811	C 12.01	N 14.01	O 16.00	F 19.00	Ne 20.18
Na 23.00	Mg 24.31											Al 26.98	Si 28.09	P 30.97	S 32.07	Cl 35.45	Ar 39.98
19 K 39.09	20 Ca 40.08	21 Sc 44.96	22 Ti 47.87	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.69	29 Cu 63.546	30 Zn 65.41	31 Ga 69.72	32 Ge 72.64	33 As 74.9216	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.23	41 Nb 92.91	42 Mo 95.94	43 Tc [98]	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.760	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	71 Lu 174.97	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.980	84 Po [209]	85 At [210]	86 Rn [222]
87 Fr [223]	88 Ra [226]	103 Lr [262]	104 Rf [261]	105 Db [262]	106 Sg [266]	107 Bh [264]	108 Hs [269]	109 Mt [268]	110 Ds [271]	111 Rg [272]	112 Uub [285]	113 Uut [286]					

Constants:

$$N_A (\text{Avogadro's Number}) = 6.022 \times 10^{23}$$

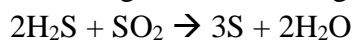
- 1) The speed of light is $3 \times 10^8 \text{ m s}^{-1}$.
What is the speed of light in km hr^{-1} .
A) 1.08×10^9
B) 3×10^5
C) 1.8×10^7
D) 1.08×10^5
-
- 2) Which of the following is intensive property?
A) Density
B) Mass
C) Length
D) Volume
-
- 3) NaCl (table salt) is identified as:
A) Element
B) Heterogeneous mixture
C) Compound
D) Homogeneous mixture
-
- 4) How many neutrons and electrons are in the ion $^{63}\text{Cu}^{2+}$?
A) 63 neutrons, and 2 electrons
B) 34 neutrons, and 27 electrons
C) 34 neutrons, and 31 electrons
D) 29 neutrons, and 27 electrons
-
- 5) What is the name of $\text{Co}_2(\text{SO}_3)_3$?
A) Cobalt(III) Sulfate
B) Cobalt trisulfate
C) Cobalt(III) Sulfite
D) Cobalt(II) trisulfite
-
- 6) Which of the following is a molecular compound?
A) NH_4Cl
B) SiCl_4
C) BaCl_2
D) Li_3N
-
- 7) What is the chemical formula for Sulfurous acid?
A) H_3PO_4
B) H_2SO_3
C) H_2SO_4
D) H_2S

- 8) The element $_{117}\text{Ts}$ has 3 isotopes 34.6% ^{284}Ts (283.4 amu), 21.2% ^{285}Ts (284.7 amu) and 44.2% ^{288}Ts (287.8 amu). What is the atomic weight?
A) 283.5
B) 283.8
C) 285.6
D) 285.8
-
- 9) How many orbitals in the shell $n = 3$?
A) 9
B) 3
C) 6
D) 18
-
- 10) What is the electron configuration of Sodium "Na"?
A) $[\text{Ne}] 3s^1$
B) $1s^2 2s^2 2p^7$
C) $[\text{Ar}] 3s^1$
D) $1s^2 2s^2 2p^5 3s^2$
-
- 11) The quantum numbers "n" and "l" for last (outermost) electron in "F" is:
A) 2, 1
B) 3, 1
C) 2, 0
D) 3, 0
-
- 12) Elements in the modern periodic table are arranged in order of increasing.....
A) oxidation number
B) mass number
C) average atomic mass
D) atomic number
-
- 13) Of the following, which gives the correct order for atomic radius for Mg, Na, P, Si and Ar? (largest to smallest)?
A) $\text{Mg} > \text{Na} > \text{P} > \text{Si} > \text{Ar}$
B) $\text{Ar} > \text{Si} > \text{P} > \text{Na} > \text{Mg}$
C) $\text{Si} > \text{P} > \text{Ar} > \text{Na} > \text{Mg}$
D) $\text{Na} > \text{Mg} > \text{Si} > \text{P} > \text{Ar}$

14) which has the largest first ionization energy?

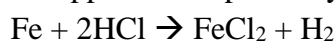
- A) Na
 - B) Al
 - C) Si
 - D) Cl**
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15) How many moles of SO₂ are required to completely react with 6.8 g of H₂S according to the following reaction?



- A) 0.50
 - B) 0.20
 - C) 0.40
 - D) 0.11**
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16) The mass of H₂ produced by reaction of 1.60 g Fe and 2.00 g HCl is 0.0505 g. What is the approximate percent yield?



- A) 94.1
 - B) 91.8**
 - C) 90.1
 - D) 87.9
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17) Determine the empirical formula of the compound with the following composition by mass: 50.71% C, 4.25% H and 45.04% O.

- A) C₃H₃O₂**
 - B) CH₂O
 - C) C₂H₆O
 - D) C₃H₄O₃
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18) compound has a molecular weight of 334.38 g mol⁻¹ and contains two nitrogen atoms per molecule. What is percent of nitrogen?

- A) 6.33
 - B) 4.19
 - C) 8.12
 - D) 8.37**
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19) A 18.2 g of NiBr₂.XH₂O are heated till all its water is driven off, 14.6 g of the anhydrous NiBr₂ are obtained. What is the value of X?

- A) 1
- B) 2
- C) 3**
- D) 4