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Section (الشعبة) :.....

Question no.	A	B	C	D	Question no.	A	B	C	D
1					8				
2					9				
3					10				
4					11				
5					12				
6									
7									

1 H Hydrogen 1.01																		2 He Helium 4.00													
3 Li Lithium 6.94	4 Be Beryllium 9.01																	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								
11 Na Sodium 22.99	12 Mg Magnesium 24.31																	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	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 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80														
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	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29														
55 Cs Cesium 132.91	56 Ba Barium 137.33	57 La Lanthanum 138.91	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)														
87 Fr Francium (223)	88 Ra Radium (226)	89 Ac Actinium (227)	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (266)	107 Bh Bohrium (264)	108 Hs Hassium (269)	109 Mt Meitnerium (268)																							
																		58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.97
																		90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	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)

QUESTION ONE (10Points)(2 Bonus)

1- The SI units for density:

- a- g/mL b- kg/m³ c- g/m³ d- kg/mL

2- Which is the shortest measurement?

- a- 10 mm b- 1 km c- 10 cm d- 10 μ m

3- The boiling point of chlorine is -34.6 °C. This temperature expressed in kelvins is

- a- -30.3 °C b- -247.8 °C c- -38.6 °C d- -13.8 °C

4- Which combination is used to represent molecular hydrogen, and atomic hydrogen, respectively?

- a- H₂, H b- 2H, H⁺ c- He, H⁻ d- Hy, H

5- Atoms X, Y, Z and R have the following data :

$^{150}_{\text{X}^{310}}$	$^{153}_{\text{Y}^{306}}$	$^{150}_{\text{Z}^{312}}$	$^{155}_{\text{R}^{312}}$
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Which pair are isotopes :

- a- Y&Z b- X&R c- X &Z d- Y & R

6- What is the name of VO₂?

- a. vanadium(II)oxide.
b. vanadium dioxide.
d. vanadium(IV)oxide.
e. vanadiumoxide.

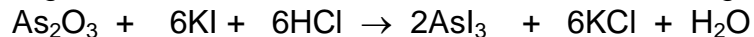
7- Calculate the number of maganisum atoms in 3.00 mol Mg₃N₂:

- a- 4.22x10²⁴ b- 3.61x10²⁴ c- 5.24x10²⁴ d- 6.32x10²⁴

8- What is the percent composition % of chromium (Cr) in K₂CrO₄?

- a- 34.8% b-40.2% c-26.8% d- 24.7%

9-What single coefficient is needed to balance the following chemical equation?



a- 2

b- 3

c- 4

d- 5

10- How many ions are produced when $\text{C}_6\text{H}_{12}\text{O}_6$ dissolves in water?

a- 0

b- 6

c- 12

d- 2

11-Which one of the following ionic compounds is soluble?

a- CuSO_4

b- $\text{Ca}(\text{OH})_2$

c- FePO_4

d- BaSO_4

12- According to the Arrhenius theory of acids and bases, acids are substances which

a. exhibit a sour taste.

b. react with all metals to release hydrogen gas.

d. produce hydronium ions(H^+) in water.

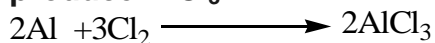
e. feel slippery on the skin

QUESTION TWO (3 POINTS)

What is the empirical formula for a compound containing 38.8% carbon, 16.2% hydrogen and 45.1% nitrogen? (2.5 Points)

QUESTION THREE (4 POINTS)

If 9.0 g of Al (Mwt.: 26.9g/mol) reacted with 5.0 g of Cl₂(Mwt.: 71.5g/mol) to produce AlCl₃.



If the actual yield was 3.5 g of AlCl₃, Calculate the percentage yield?

QUESTION FOUR(3 POINTS)

Complete the reaction :



What is the :

Ionic equation :

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Net ionic equation :

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Good Luck