

No.	Items	Score													
		1	2												
1	Fill in the gaps of the following sentences: 1) Name of the chemical element which has the following distribution of electrons on the energetical levels $2\bar{e} \ 8\bar{e} \ 8\bar{e}$ is _____. 2) The atom of the chemical element with atomic number 9 contains in the nucleus _____ protons and _____ neutrons. 3) Volatile compound of carbon with hydrogen has the following formula _____. 4) In the line of elements Li–Na–K, metallic properties _____. 5) The element with the charge of nucleus +13 is found in group _____ subgroup _____ and manifests in compounds the valence _____. 6) Higher oxide with the composition E_2O_5 formed from the element _____.	L	L												
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2	Sea salt is used in medicine and cosmetology, as it contains many chemical elements. Among them there are: Cl, Na, Mg, S, O . Fill in the blanks of the table for the substances formed from the atoms of the proposed elements: <table><tr><th>Chemical formula of substance</th><th>Type of chemical bond</th><th>Name of substance</th></tr><tr><td>Cl_2</td><td></td><td></td></tr><tr><td></td><td>ionic</td><td></td></tr><tr><td></td><td></td><td>sulfur oxide (IV)</td></tr></table>	Chemical formula of substance	Type of chemical bond	Name of substance	Cl_2				ionic				sulfur oxide (IV)	L	L
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3	One of the domains in which is used the nitric acid is the preparation of nitrates, commonly used as fertilizers. Write in the blank spaces the reactions equations of obtaining nitrates according to the following schemes, choosing those substances which interact with nitric acid from the given row: <div>Na_2SiO_3, BaO, $Cu(OH)_2$, HCl.</div> 1) HNO_3 + base <div></div> 2) HNO_3 + salt <div></div>	L	L												
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6	<p>Fill in the gaps in the statements below:</p> <p>1. The smallest chemical particule indivisible of a substance is called _____.</p> <p>2. Solutions in which pH = 7 have _____ medium.</p> <p>3. Salts of phosphoric acid are called _____.</p> <p>4. In solutions, the alkaline bases are dissociated in cations of _____ and anions of _____.</p> <p>5. One of the physical properties of aluminum is _____.</p> <p>6. Carbon dioxide in laboratory is obtained through the interaction of calcium carbonate with _____ acid.</p>	<table><tr><td>L</td></tr><tr><td>0</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr></table>	L	0	1	2	3	4	5	6	7	<table><tr><td>L</td></tr><tr><td>0</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr></table>	L	0	1	2	3	4	5	6	7
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7	<p>Barium carbonate is used in wastewater cleaning treatments, in manufacture of ceramics and glass. In school laboratory, it can be obtained according to the following scheme:</p> <p style="text-align: center;">salt_(solution) + salt_(solution) → salt_(precipitate) + salt_(solution)</p> <p>1) Using the table of solubility, write in the blank fields the chemical formula of:</p> <p>a) soluble salt of barium _____</p> <p>b) soluble carbonat of metal _____</p> <p>2) Write the ecuation of obtaining barium carbonate, according to the proposed scheme, from substances chosen in molecular form (ME), complete ionic (CIE) and reduced ionic (RIE):</p> <p>_____ (ME)</p> <p>_____ (CIE)</p> <p>_____ (RIE)</p>	<table><tr><td>L</td></tr><tr><td>0</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr></table>	L	0	1	2	3	4	5	6	7	<table><tr><td>L</td></tr><tr><td>0</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr></table>	L	0	1	2	3	4	5	6	7
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8	<p>Circle letter A if statement is true and letter F if statement is false.</p> <p>1) T F Phenol has molecular formula C₆H₅-NH₂.</p> <p>2) T F 2-metilpropane is isomer with 2- metilbuthane.</p> <p>3) T F Starch is identified easier by iodine solution.</p> <p>4) T F Glycerine is used in production of explosive substances.</p> <p>5) T F Synthetic rubber is obtained from butadiene.</p> <p>6) T F Group -CO-NH- is called peptide group.</p> <p>7) T F Fats are heavier than water.</p>	<table><tr><td>L</td></tr><tr><td>0</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr></table>	L	0	1	2	3	4	5	6	7	<table><tr><td>L</td></tr><tr><td>0</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr></table>	L	0	1	2	3	4	5	6	7
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11	<p>Finalize the schemes of proposed reactions with corresponding formulas and coefficients:</p> <p>1) $\text{CH}_2=\text{CH}_2 + \text{Br}_2 \longrightarrow$ _____</p> <p>2) $\text{H}-\text{C}\begin{matrix} \text{O} \\ \parallel \\ \text{H} \end{matrix} + \text{Ag}_2\text{O} \longrightarrow$ _____ + _____</p> <p>3) $\text{C}_3\text{H}_8 + \text{O}_2 \longrightarrow$ _____ + _____</p>	<table border="1"> <tr><td>L</td></tr> <tr><td>0</td></tr> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>3</td></tr> <tr><td>4</td></tr> <tr><td>5</td></tr> <tr><td>6</td></tr> </table>	L	0	1	2	3	4	5	6	<table border="1"> <tr><td>L</td></tr> <tr><td>0</td></tr> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>3</td></tr> <tr><td>4</td></tr> <tr><td>5</td></tr> <tr><td>6</td></tr> </table>	L	0	1	2	3	4	5	6															
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12	<p>1) From the line of substances:</p> <p style="text-align: center;">CH_3OH, $\text{CH}_3-\text{CH}=\text{CH}_2$, $\text{CH}\equiv\text{CH}$, CH_3COOH</p> <p>select the substances for which the statements below are true and write the corresponding formulas in the reserved space.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>No.</th> <th>Substance is used</th> <th>Formula of substance</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>as solvent for lacquers and paints</td> <td></td> </tr> <tr> <td>2.</td> <td>for welding works</td> <td></td> </tr> <tr> <td>3.</td> <td>to preserve food products in food industry</td> <td></td> </tr> <tr> <td>4.</td> <td>for obtaining polypropylene</td> <td></td> </tr> </tbody> </table> <p>2) For one of the substances from the proposed line, write an equation of the obtaining reaction:</p> <p>_____</p>	No.	Substance is used	Formula of substance	1.	as solvent for lacquers and paints		2.	for welding works		3.	to preserve food products in food industry		4.	for obtaining polypropylene		<table border="1"> <tr><td>L</td></tr> <tr><td>0</td></tr> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>3</td></tr> <tr><td>4</td></tr> <tr><td>5</td></tr> <tr><td>6</td></tr> </table>	L	0	1	2	3	4	5	6	<table border="1"> <tr><td>L</td></tr> <tr><td>0</td></tr> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>3</td></tr> <tr><td>4</td></tr> <tr><td>5</td></tr> <tr><td>6</td></tr> </table>	L	0	1	2	3	4	5	6
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SISTEMUL PERIODIC AL ELEMENTELOR CHIMICE

	I	II	III	IV	V	VI	VII	VIII		
1	1 Hidrogen H 1,0079							2 Heliu He 4,0026		
2	3 Litiu Li 6,941	4 Beriliu Be 9,01218	5 Bor B 10,81	6 Carbon C 12,011	7 Azot N 14,0067	8 Oxigen O 15,9994	9 Fluor F 18,9984	10 Neon Ne 20,179		
3	11 Sodiu Na 22,98977	12 Magneziu Mg 24,305	13 Aluminiu Al 26,98154	14 Siliciu Si 28,0855	15 Fosfor P 30,97376	16 Sulf S 32,06	17 Clor Cl 35,453	18 Argon Ar 39,948		
4	19 Potasiu K 39,0983	20 Calciu Ca 40,08	21 Scandiu Sc 44,9559	22 Titan Ti 47,88	23 Vanadiu V 50,9415	24 Crom Cr 51,996	25 Mangan Mn 54,938	26 Fier Fe 55,847	27 Cobalt Co 58,9332	28 Nichel Ni 58,69
	29 Cupru 63,546 Cu	30 Zinc 65,38 Zn	31 Galiu 69,72 Ga	32 Germaniu 72,59 Ge	33 Arsen 74,9216 As	34 Seleniu 78,96 Se	35 Brom 79,904 Br	36 Kripton 83,80 Kr		
5	37 Rubidiu 85,4678 Rb	38 Stronțiu 87,62 Sr	39 Ytriu 88,9059 Y	40 Zirconiu 91,22 Zr	41 Niobiu 92,9064 Nb	42 Molibden 95,94 Mo	43 Tehnețiu [98] Tc	44 Ruteniu 101,07 Ru	45 Rodiu 102,9055 Rh	46 Paladiu 106,42 Pd
	47 Argint 107,868 Ag	48 Cadmiu 112,41 Cd	49 Indiu 114,82 In	50 Staniu 118,69 Sn	51 Stibiu 121,75 Sb	52 Telur 127,60 Te	53 Iod I 126,9045	54 Xenon Xe 131,29		
6	55 Ceziu 132,9054 Cs	56 Bariu 137,33 Ba	57* Lantan 138,9055 La	72 Hafniu 178,49 Hf	73 Tantal 180,948 Ta	74 Wolfram 183,85 W	75 Reniu 186,207 Re	76 Osmiu 190,2 Os	77 Iridiu 192,22 Ir	78 Platina 195,08 Pt
	79 Aur 196,9665 Au	80 Mercur 200,59 Hg	81 Talii 204,383 Tl	82 Plumb 207,2 Pb	83 Bismut 208,9804 Bi	84 Poloniu [209] Po	85 Astatiniu [210] At	86 Radon [222] Rn		
7	87 Franciu Fr [223]	88 Radiu 226,0254 Ra	89** Actiniu 227,0278 Ac	104 Rutherfordium [261] Rf	105 Dubnium [262] Db	106 Seaborgium [263] Sg	107 Bohrium [262] Bh	108 Hassium [267,13] Hs	109 Meitnerium [268,14] Mt	110 Uun [?]

*Lantanide

58 Ce Ceriu 140,12	59 Pr Praseodim 140,9077	60 Nd Neodim 144,24	61 Pm Prometiu [145]	62 Sm Samarium 150,36	63 Eu Europiu 151,96	64 Gd Gadolinu 157,25	65 Tb Terbiu 158,9254	66 Dy Disprosiu 162,50	67 Ho Holmiu 164,9304	68 Er Erbium 167,26	69 Tm Tuliu 168,9342	70 Yb Yterbiu 173,04	71 Lu Lutețiu 174,967
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**Actinide

90 Th Toriu 232,0381	91 Pa Protactiniu 231,0359	92 U Uranu 238,0389	93 Np Neptuniu 237,0482	94 Pu Plutoni [244]	95 Am Americiu [243]	96 Cm Curiu [247]	97 Bk Berkeliu [247]	98 Cf Californiu [251]	99 Es Einsteiniu [252]	100 Fm Fermiu [257]	101 Md Mendeleviu [258]	102 No Nobelium [255]	103 Lr Lawrenciu [260]
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SOLUBILITATEA ACIZILOR, BAZELOR, SĂRURILOR ÎN APĂ

	H ⁺	Na ⁺	K ⁺	NH ₄ ⁺	Cu ²⁺	Ag ⁺	Mg ²⁺	Ca ²⁺	Ba ²⁺	Zn ²⁺	Al ³⁺	Pb ²⁺	Cr ³⁺	Fe ³⁺	Fe ²⁺
OH ⁻		S	S	S	I	-	I	P	S	I	I	I	I	I	I
F ⁻	S	S	S	S	S	S	I	I	P	S	P	I	I	I	I
Cl ⁻	S	S	S	S	S	I	S	S	S	S	S	P	S	S	S
Br ⁻	S	S	S	S	S	I	S	S	S	S	S	P	S	S	S
I ⁻	S	S	S	S	-	I	S	S	S	S	S	I	S	-	S
S ²⁻	S	S	S	S	I	I	S	S	S	I	-	I	-	-	I
SO ₃ ²⁻	S	S	S	S	I	I	I	I	I	I	-	I	-	-	I
SO ₄ ²⁻	S	S	S	S	S	P	S	P	I	S	S	I	S	S	S
CO ₃ ²⁻	S	S	S	S	-	I	I	I	I	I	-	I	-	-	I
SiO ₃ ²⁻	I	S	S	-	-	-	I	I	I	I	-	I	-	-	I
NO ₃ ⁻	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
PO ₄ ³⁻	S	S	S	S	I	I	I	I	I	I	I	I	I	I	I
CH ₃ COO ⁻	S	S	S	S	S	S	S	S	S	S	S	S	-	-	S

Notă: S – substanță solubilă, I – insolubilă, P – puțin solubil; liniuța înseamnă că substanța nu există sau se descompune în apă.

SERIA ELECTRONEGATIVITĂȚII

F	O	N	Cl	Br	I	S	C	Se	P	H	As	B	Si	Al	Mg	Ca	Na	K
4,0	3,5	3,07	3,0	2,8	2,5	2,5	2,5	2,4	2,1	2,1	2,0	2,0	1,8	1,5	1,2	1,04	0,9	0,8

SERIA TENSIUNII METALELOR

Li K Ba Sr Ca Na Mg Al Mn Zn Cr Fe Ni Sn Pb (H) Cu Hg Ag Pt Au