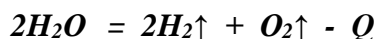


No.	Items	Score																																																	
		1	2																																																
1	<p>Buckwheat porridge is useful because of the vitamins and minerals it contains. It is rich in potassium, magnesium, phosphorus, sulfur. Complete the blank spaces in the sentences below:</p> <p>a) <i>For potassium:</i> It is situated in theperiod, in the group 1, the subgroup, contains in nucleus..... protons and neutrons.</p> <p>b) <i>For phosphorus:</i> Has on the last energy level electrons, it forms superior oxide with the formula, showing in it thevalence.</p> <p>c) <i>For sulfur:</i> Has the spread of electrons on energetic levels..... , forms volatile compound with hydrogen with the formula</p> <p>d) <i>For magnesium:</i> Forms superior hydroxide with the formula, shows in the compounds the constant degree of oxidation</p>	<table border="1"> <tr><td>L</td><td>L</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> <tr><td>10</td><td>10</td></tr> <tr><td>11</td><td>11</td></tr> </table>	L	L	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	<table border="1"> <tr><td>L</td><td>L</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>	L	L	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9
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2	<p>To extend the shelf life of foods, they are stored in packages containing a gaseous mixture of carbon dioxide (IV) and nitrogen, and in the preparation process the preservatives are used, for exemple, sodium chloride. I. Write for each substance the type of chemical bond in the space reserved:</p> <p>a) CO_2 –;</p> <p>b) N_2 –;</p> <p>c) NaCl –</p> <p>II. Write a reaction equation of obtaining for the substance CO_2:</p> <p>.....</p> <p>III. Write a reaction equation of interaction with hydrogen for the substance N_2:</p> <p>.....</p> <p>IV. Write two physical properties for the substance NaCl:</p> <p>a) ; b)</p>	<table border="1"> <tr><td>L</td><td>L</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> <tr><td>7</td><td>7</td></tr> <tr><td>8</td><td>8</td></tr> <tr><td>9</td><td>9</td></tr> </table>	L	L	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	<table border="1"> <tr><td>L</td><td>L</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> </table>	L	L	0	0	1	1	2	2	3	3	4	4	5	5	6	6										
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3	<p><i>Calcium chloride</i> granules are used in household dehumidifiers. Write the equations of three chemical obtaining reactions of <i>calcium chloride</i>, according to the proposed schemes by selecting the appropriate substances from the line: CaO, HCl, Ca, CuCl_2, Ca(OH)_2, ZnCl_2</p> <p>1) <i>Base + acid</i></p> <p>2) <i>Basic oxide + acid</i></p> <p>3) <i>Base + salt</i></p>	<table border="1"> <tr><td>L</td><td>L</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> </table>	L	L	0	0	1	1	2	2	3	3	4	4	5	5	6	6	<table border="1"> <tr><td>L</td><td>L</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>3</td></tr> <tr><td>4</td><td>4</td></tr> <tr><td>5</td><td>5</td></tr> <tr><td>6</td><td>6</td></tr> </table>	L	L	0	0	1	1	2	2	3	3	4	4	5	5	6	6																
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4 One of the methods of obtaining *hydrogen* for fuel cells of automobiles is to decompose water using the electric current which takes place according to the equation:



I. Characterize this reaction according to the following criteria:

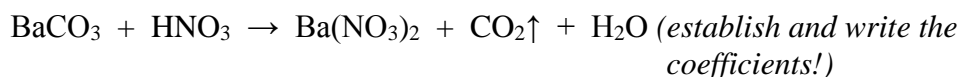
No.	Criteria	Type of the chemical reaction
1	By the thermal effect	
2	Direction of the reaction	
3	Number and composition of the initial substances and of the products	

II. Complete the reactions schemes that characterize the *chemical properties* of hydrogen with the chemical formulas of the substances and coefficients:

- a) $H_2 + Cl_2 \rightarrow \text{_____}$
b) $H_2 + C \rightarrow \text{_____}$
c) $H_2 + Fe_2O_3 \rightarrow \text{_____} + \text{_____}$

L	L
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

5 *Barium nitrate* is used in pyrotechnics to color the flame in green.
Solve the problem. Calculate the weight of barium nitrate obtained at the interaction of nitric acid with a weight of 12,6 g with barium carbonate, if the chemical reaction proceeds according to the following scheme:



It is given:

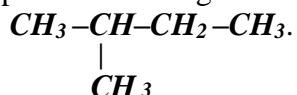
Solution:

Answer: _____

L	L
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

<p>6</p>	<p>Write in the blank spaces of the proposed sentences, the letter T, if the statement is true and letter F, if it is false.</p> <p>1) The atomic number of the element coincides numerically with the number of neutrons in the nucleus (.....).</p> <p>2) The mass of the starting substances is equal to the mass of reaction products (.....).</p> <p>3) In alkaline base solutions the pH is higher than 7 (.....), and the color of the methyl orange changes to red (.....).</p> <p>4) Nitrogen shows the oxidation degree +5 in HNO_3 (.....).</p> <p>5) In 400 g of solution with a 20% mass fraction contains 80 g of dissolved substance (.....).</p> <p>6) Sodium oxide has more pronounced basic properties than potassium oxide (.....).</p> <p>7) Cast iron and steel are alloys of aluminum (.....).</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> <tr><td>7</td></tr> <tr><td>8</td></tr> </table>	L	0	1	2	3	4	5	6	7	8	<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> <tr><td>7</td></tr> <tr><td>8</td></tr> </table>	L	0	1	2	3	4	5	6	7	8											
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<p>7</p>	<p><i>Copper (II) hydroxide</i> is part of the preparations for the protection of plants against fungal and bacterial diseases.</p> <p>I. Complete the blank spaces in the table below with the formulas and names of the soluble substances at the interaction of which the <i>copper (II) hydroxide</i> is formed:</p> <table border="1"> <thead> <tr> <th><i>Ions</i></th> <th><i>Formula of a soluble substance</i></th> <th><i>Name of substance</i></th> </tr> </thead> <tbody> <tr> <td>Cu^{2+}</td> <td></td> <td></td> </tr> <tr> <td>OH^-</td> <td></td> <td></td> </tr> </tbody> </table> <p>II. Using the solubility table and formulas of the substances composed, write the reaction equation of obtaining for <i>copper (II) hydroxide</i> in molecular form (ME), completed ionic (CEI) and reduced ionic (RIE).</p> <p>_____ (ME)</p> <p>_____ (CEI)</p> <p>_____ (RIE)</p>	<i>Ions</i>	<i>Formula of a soluble substance</i>	<i>Name of substance</i>	Cu^{2+}			OH^-			<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> <tr><td>7</td></tr> <tr><td>8</td></tr> <tr><td>9</td></tr> </table>	L	0	1	2	3	4	5	6	7	8	9	<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> <tr><td>7</td></tr> <tr><td>8</td></tr> <tr><td>9</td></tr> </table>	L	0	1	2	3	4	5	6	7	8	9
<i>Ions</i>	<i>Formula of a soluble substance</i>	<i>Name of substance</i>																																
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OH^-																																		
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<p>8</p>	<p>Choose and write in the space reserved below, the word from the brackets that correctly completes each of the statements:</p> <p>1) Synthetic rubber is obtained by the reaction. <i>(addition / substitution) / polymerization)</i></p> <p>2) Amino acids are contained in the composition of..... <i>(fats / proteins / carbohydrates)</i></p> <p>3) Glycerol can be identified with..... <i>(copper (II) hydroxide / silver oxide / iodine)</i></p> <p>4) Formalin is called the aqueous solution of..... <i>(ethanol / methanal / acetic acid)</i></p> <p>5)..... have the general formula C_nH_{2n}. <i>(alkynes / alkadienes / alkenes)</i></p> <p>6) The substance with the chemical formula C_6H_5OH is called <i>(nitrobenzene / phenol / ethanol)</i></p> <p>7) are contained in the composition of petroleum. <i>(hydrocarbons / aldehydes / esters)</i></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> <tr><td>7</td></tr> </table>	L	0	1	2	3	4	5	6	7	<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> <tr><td>7</td></tr> </table>	L	0	1	2	3	4	5	6	7													
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9 A component of petrol with a high octane number is the substance:



I. Complete in the blanks spaces of the following sentences on the given substance:

a) name

b) general formula of the homologous series

c) name of the homologous series

II. Complete the blank spaces in the table for the proposed substance:

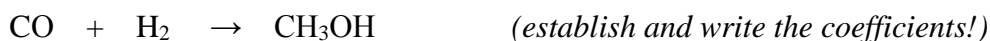
	<i>Structural semi-developed formula</i>	<i>Name</i>
Isomer		
Homologue		

L
0
1
2
3
4
5
6
7

L
0
1
2
3
4
5
6
7

10 *Methanol* is included in the composition of the liquids used to clean car windows in winter.

Solve the problem. Calculate the weight of methanol, obtained from carbon (II) oxide, with a volume of 67,2 l (STP), if the chemical reaction proceeds according to the following scheme:



It is given:

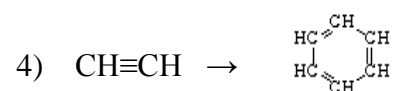
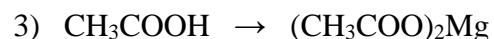
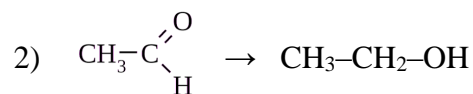
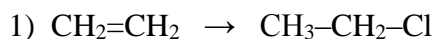
Solution:

Answer: _____

L
0
1
2
3
4
5
6
7

L
0
1
2
3
4
5
6
7

11 Write the equation reactions for the schemes below:



L
0
1
2
3
4
5
6
7
8

L
0
1
2
3
4
5
6
7
8

12 I. From the line: $\text{CH}_3-\text{CH}=\text{CH}_2$, $\text{C}_{12}\text{H}_{22}\text{O}_{11}$, CH_4 , $\text{CH}_3-\text{CH}_2-\text{OH}$, choose one substance for each characteristic and write the formula and the name of the substance in the space reserved in the table.

No.	Characteristic of substance	Formula of the substance	Name of substance
1	It is used to obtain plastics		
2	It is used to obtain acetylene		
3	It is used as an antiseptic		
4	It is used as a food product		

L
0
1
2
3
4
5
6
7
8
9
10
11

L
0
1
2
3
4
5
6
7
8
9
10
11

II. For the substance $\text{CH}_3-\text{CH}_2-\text{OH}$ write in the reserved space

a) a physical property:

.....;

b) an equation of the obtaining reaction:

.....

SISTEMUL PERIODIC AL ELEMENTELOR CHIMICE

	I	II	III	IV	V	VI	VII	VIII					
1	1 H 1,0079 Hidrogen									2 He 4,0026 Helium			
2	3 Li 6,941 Litiu	4 Be 9,01218 Beriliu	5 B 10,81 Bor	6 C 12,011 Carbon	7 N 14,0067 Azot	8 O 15,9994 Oxigen	9 F 18,9984 Fluor	10 Ne 20,179 Neon					
3	11 Na 22,98977 Sodiu	12 Mg 24,305 Magneziu	13 Al 26,98154 Aluminiu	14 Si 28,0855 Siliciu	15 P 30,97376 Fosfor	16 S 32,06 Sulf	17 Cl 35,453 Clor	18 Ar 39,948 Argon					
4	19 K 39,0983 Potasiu	20 Ca 40,08 Calciu	21 44,9559 Scandiu	22 47,88 Titan	23 50,9415 Vanadiu	24 51,996 Crom	25 54,938 Mangan	26 55,847 Fier	27 58,9332 Cobalt	28 58,69 Nichel			
	29 63,546 Cupru	30 65,38 Zinc	31 69,72 Galiu	32 72,59 Germaniu	33 74,9216 Arsen	34 78,96 Seleniu	35 79,904 Brom	36 83,80 Kripton					
5	37 85,4678 Rubidiu	38 87,62 Stronțiu	39 88,9059 Ytriu	40 91,22 Zirconiu	41 92,9064 Niobiu	42 95,94 Molibden	43 [98] Tehnețiu	44 101,07 Ruteniu	45 102,9055 Rodiu	46 106,42 Paladiu			
	47 107,868 Argint	48 112,41 Cadmium	49 114,82 Indiu	50 118,69 Staniu	51 121,75 Stibiu	52 127,60 Telur	53 126,9045 Iod	54 131,29 Xenon					
6	55 132,9054 Ceziu	56 137,33 Bariu	57* 138,9055 Lantan	72 178,49 Hafniu	73 180,948 Tantal	74 183,85 Volfram	75 186,207 Reniu	76 190,2 Osmiu	77 192,22 Iridiu	78 195,08 Platina			
	79 196,9665 Aur	80 200,59 Mercur	81 204,383 Taliu	82 207,2 Plumb	83 208,9804 Bismut	84 [209] Poloniu	85 [210] Astatiniu	86 [222] Radon					
7	87 [223] Franciu	88 226,0254 Radium	89** 227,0278 Actiniu	104 [261] Rutherfordium	105 [262] Dubnium	106 [263] Seaborgium	107 [262] Bohrium	108 [267,13] Hassium	109 [268,14] Meitnerium	110 [281] Darmstadtium			

*Lantanie

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

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

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

Notă: S – substanță solubilă, I – insolubilă, P – puțin solubilă; «>» substanța nu există sau se descompune în apă; ↑ - substanța se degajă sub formă de gaz sau se descompune cu degajare de gaz

SERIA ELECTRONEGATIVITĂȚII

F	O	N	Cl	Br	I	S	C	Se	P	H	As	B	Si	Al	Mg	Ca	Li	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	1,0	0,9	0,8

SERIA TENSIUNII METALELOR

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