1.

:

$$13CO \ + \ 33H_2 \ \longrightarrow \ 3CH_4 \ + \ 2C_2H_6 \ + \ 2C_3H_8 \ + \ 13H_2O$$

1   CO   2 H_2,

.

.

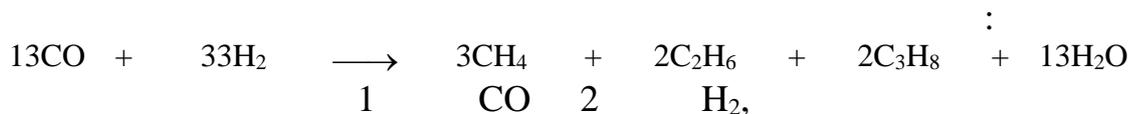| :	1	2	0	0	0	0
.	0.1	(0.1·33)/13	(0.1·3)/13	(0.1·2)/13	(0.1·2)/13	0.1
(.) :	0.9	(2-0.254)	0.0230	0.0154	0.0154	0.1

,   3   ,
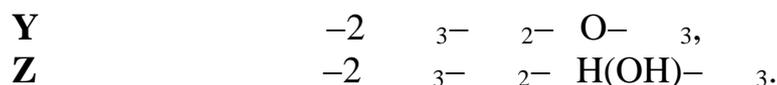
$$(0.9 + 2 - 0.254 + 0.0230 + 0.0154 + 0.0154 + 0.1) = 2.8 \qquad .$$

,

$$3 \,/\, 2.8 = 1.07 \qquad .$$

.

	5
	15
	5
	25

2.

2.1.   :

$$M = 4.38 \cdot 29 \ / \qquad = 127 \ / \qquad .$$

1 $127 \cdot 0.559 = 71$ (2   ),
$127 \cdot 0.378 = 48$ (4   ) $127 \cdot 0.063 = 8$
(8   ). $-$ $_4$ $_8$ l_2.   ,

.

2.2.   ,

, $_4$ $_8$ l_2 .   ,

.

,

X   2,2– $_3-$ $_2-$ l_2- $_3,$

Y	−2	3−	2−	O−	3,
Z	−2	3−	2−	H(OH)−	3.

2.3. :

$$CH_3CH_2-CHCl_2-CH_3 + 2\,KOH \longrightarrow CH_3CH_2-\overset{\displaystyle}{\underset{\displaystyle O}{C}}-CH_3 + H_2O$$

$$CH_3CH_2-\overset{\displaystyle}{\underset{\displaystyle O}{C}}-CH_3 + H2 \xrightarrow{t,\,Ni} CH_3CH_2-\underset{\displaystyle OH}{CH}-CH_3$$

.
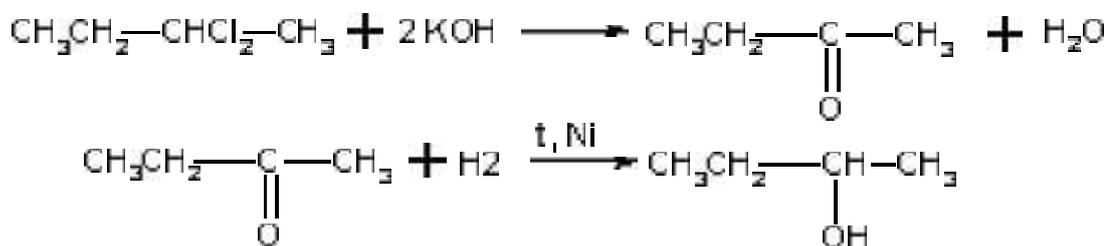
X	4
-	7
X, Y Z (2)	6
X, Y Z (1)	3
(2) – 2	4
	24

3.

3.1.   :
$$MgSO_4 + Ba(NO_3)_2 \longrightarrow BaSO_4\downarrow + Mg(NO_3)_2;$$
$$MgCl_2 + 2AgNO_3 \longrightarrow 2AgCl\downarrow + Mg(NO_3)_2.$$
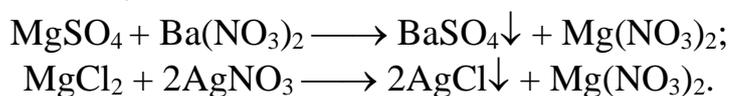
3.2.   2.0 $MgCl_2$.   :
$m(MgCl_2) = x$.
$m(MgSO_4) = (2 - x)$.
$n(MgSO_4) = m(MgSO_4) / M(MgSO_4) = (2 - x) / (24 + 32 + 4 \cdot 16) =$
$= (2 - x) / 120$.
$n(BaSO_4) = n(MgSO_4) = (2 - x) / 120$.
$m(BaSO_4) = n(BaSO_4) \cdot M(BaSO_4) = (2 - x) / 120 \cdot (137 + 32 + 4 \cdot 16) =$
$= 1.94(2 - x) = 3.88 - 1.94x$.
$n(MgCl_2) = m(MgCl_2) / M(MgCl_2) = x / (24 + 2 \cdot 35.5) = 0.0105x$.
$n(AgCl) = 2n(MgCl_2) = 2 \cdot 0.0105x = 0.0210$.
$m(AgCl) = n(AgCl) \cdot M(AgCl) = 0.0210x \cdot (108 + 35.5) = 3.01x$.
               :
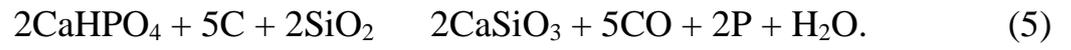$m(AgCl) / m(BaSO_4) = 3,$ $3.01x / (3.88 - 1.94x) = 3.$:
$3.01 = 11.6 - 5.82$
$8.83 = 11.6$
  $= 1.31 \approx 1.3$.
$m(MgCl_2) = 1.3$, $m(MgSO_4) = (2 - 1.3) = 0.7$.

$\omega(MgCl_2) = m(MgCl_2) / m(\quad) = 1.3 / 2 = 0.65,\qquad 65\ \%.$
$\omega(MgSO_4) = 1 - \omega(MgCl_2) = 1 - 0.65 = 0.35,\qquad 35\ \%.$

3.3.   :
$MgSO_4 + 2KOH \longrightarrow Mg(OH)_2 + K_2SO_4;$
$MgCl_2 + 2KOH \longrightarrow Mg(OH)_2 + 2KCl.$
     :
$n(Mg(OH)_2) = n(MgSO_4) + n(MgCl_2).$
$n(MgSO_4) = m(MgSO_4) / M(MgSO_4) = 0.7 / 120 = 0.00583 \qquad .$
$n(MgCl_2) = m(MgCl_2) / M(MgCl_2) = 1.3 / 95 = 0.0137 \qquad .$
$n(Mg(OH)_2) = 0.00583 + 0.0137 = 0.0195 \qquad .$
$m(Mg(OH)_2) = n(Mg(OH)_2) \cdot M(Mg(OH)_2) = 0.0195 \cdot 58 = 1.13\ .$

.

BaSO$_4$ AgCl (2)	4
	10
Mg(OH)$_2$ (2)	4
Mg(OH)$_2$	7
	25

4

4.1.   **X** –   (
   ,   ,
),   , Na$_3$P.
      Y –
(   ).   H$_3$PO$_4$.

4.2.   .
 X **Y**.

$$P + 3Na \quad Na_3P \qquad\qquad (1)$$
(   )

$$Na_3P + 3H_2O \quad 3NaOH + PH_3 \qquad (2)$$
(,   -   ,
)

$$2PH_3 + 4O_2 \quad 2H_3PO_4 \qquad\qquad (3)$$
(
      ,   ,   ,
           ,   ,
        ,   )

$$Ca(OH)_2 + H_3PO_4 \rightarrow CaHPO_4 + 2H_2O \tag{4}$$

(,   ,   )

$$2CaHPO_4 + 5C + 2SiO_2 \rightarrow 2CaSiO_3 + 5CO + 2P + H_2O. \tag{5}$$

4.3.   (1)   (5)   ,
(2)   (4)   .
(4)

                         .   (3)
.

(   )   .

.

X **Y** (2) – 3	6
(5) – 3	15
(5) – 1	5
	26