

Ülesannete lahendused*

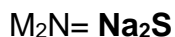
8. klass

Tallinna XIX koolinoorte keemiaolümpiaadi koolivoor 2018/ 2019 õ. a

1. (10)

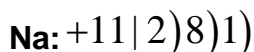
1.

$$\Sigma(p) = 2 \times 11p + 16p = 38p; \mathbf{Np} = \mathbf{N\bar{e}}$$

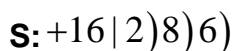


1

2.

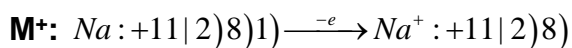


1

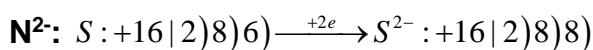


1

3.



2



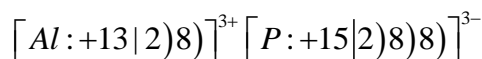
2

4. $\mathbf{H_2S}$

1

5.

$$38p - 10p = 28p$$



2
10p

2. (10)

$$\text{i. } 1051 \text{ kg/m}^3 = \frac{1051 \times 10^3 \text{ g}}{1 \times 10^6 \text{ cm}^3} = \mathbf{1,051 \text{ g/cm}^3}$$

0,5

$$\text{ii. } \mathbf{m(\text{aine, lahus Mari})} = 250 \text{ cm}^3 \times 1,051 \frac{\text{g}}{\text{cm}^3} \times 0,07 = \mathbf{18,39 \text{ g}}$$

$$\mathbf{m(\text{Mari lahus peale vee lisamist})} = 250 \text{ cm}^3 \times 1,051 \frac{\text{g}}{\text{cm}^3} + 100 \text{ cm}^3 \cdot 1 \frac{\text{g}}{\text{cm}^3} = \mathbf{362,75 \text{ g}}$$

$$\mathbf{P(\text{lahus Mari peale vee lisamist})} = \frac{18,39}{362,75} \times 100\% = \mathbf{5,07\%}$$

2

iii. Anu lahuse protsendilise sisalduse leidmine:

$$\mathbf{m(\text{aine Anu lahuses peale aine juurde lisamist})} = 300 \text{ cm}^3 \times 1,0059 \text{ g/cm}^3 \times \mathbf{X} + 12,6 \text{ g} = (301,77 \times \mathbf{X} + 12,6) \text{ g}$$

$$\mathbf{m(\text{Anu lahus peale aine juurde lisamist})} = 300 \text{ cm}^3 \times 1,0059 \frac{\text{g}}{\text{cm}^3} + 12,6 \text{ g} = \mathbf{314,37 \text{ g}}$$

$$\mathbf{P} = \frac{(301,77 \times \mathbf{X} + 12,6)}{314,37} \times 100\% = \mathbf{5,07\%}$$

$$\mathbf{X \sim 0,011}$$

P (lahus Anu) ~ 1,1 %

3

iv. m (aine Anu lahuses peale aine juurde lisamist) =

$$= 300 \text{ cm}^3 \times 1,0059 \frac{\text{g}}{\text{cm}^3} \times 0,011 + 12,6 \text{ g} = 15,92 \text{ g}$$

$$m (\text{aine lõpplahuses}) = 18,39 + 15,92 = 34,31 \text{ g}$$

$$m (\text{lõpplahus}) = 362,75 + 314,37 = 677,12 \text{ g}$$

$$\mathbf{P (\text{lõpplahus}) = \frac{34,31}{677,12} \times 100\% = 5,067\% \sim 5,07\% , (\text{vastas})}$$

2

v. 30 %-lise äädikhappe ruumala leidmine:

$$P = \frac{(V \times 1,0383 \times 0,3)}{(V \times 1,0383 + 300)} \times 100\% = 3,0\%$$

$$\mathbf{V = 32,1 \text{ ml}}$$

1,5

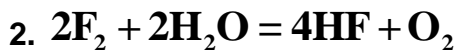
vi. Keemialaboris kasutatakse 5 %-list söögisooda lahust tavaliselt nahale sattunud happe ja 3 %-list äädikhappe lahust aluse neutraliseerimiseks peale kohest veega loputamist.

1
10p

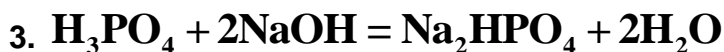
3. (10)



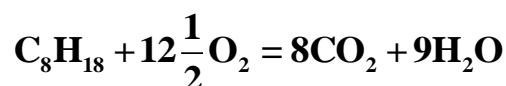
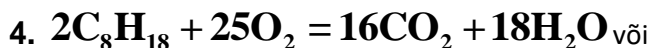
2



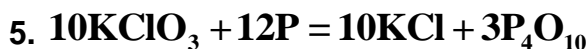
2



2



2



2
10p

4. (10)

1.

i. - b - anuma materjal takistab õli kiiret vaigustumist

0,5

материал сосуда препятствует быстрому осмолению масла

ii. - d – lahuse hermeetiline hoidmine kummikorgi all

0,5

герметичное хранение раствора под резиновой пробкой

iii. – c – anuma materjal on üheks segu komponendiks

0,5

материал емкости - один из компонентов смеси

iv. – e – klaasanum korgist korgiga

0,5

стеклянный сосуд с корковой пробкой

v. – a – inertsest materjalist anum laia kaelaga

0,5

сосуд из инертного материала с широким горлом

2.

- | | |
|---|---|
| i. – d – jaotuslehter
<i>делительная воронка</i> | 1 |
| ii. – b – portselankauss
<i>фарфоровая чашка</i> | 1 |
| iii. – e – magnet
<i>магнит</i> | 1 |
| iv. – c – termomeeter
<i>термометр</i> | 1 |
| v. – a - lehter filtreerimiseks
<i>воронка для фильтрования</i> | 1 |

3.



- | | |
|------------------------------------|------------|
| kaitseprillid | 0,5 |
| laborikittel | 0,5 |
| kummikindad | 0,5 |
| pikad püksid | 0,5 |
| kinnise ninaotsaga jalanõud | <u>0,5</u> |
| | 10p |

* Keemiaolümpiaadi koolivooru komisjon võib iseseisvalt hinnata võimalikke alternatiivseid lahendusvariante.