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11-4

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① 1) $4\text{HNO}_3 = 4\text{NO}_2 + \text{O}_2 + 2\text{H}_2\text{O}$ 2

2) $\text{H}_2\text{S} + \text{KMnO}_4 + 3\text{H}_2\text{SO}_4 = 5\text{S}\downarrow + 2\text{MnSO}_4 + \text{K}_2\text{SO}_4 + 8\text{H}_2\text{O}$ 2

3) $\text{FeCl}_2 + \text{NaNO}_2 + 2\text{HCl} \rightarrow \text{NO} + \text{FeCl}_3 + \text{NaCl} + \text{H}_2\text{O}$ 2

4) $\text{K}[\text{Al}(\text{OH})_4] + \text{CO}_2 \rightarrow \text{Al}(\text{OH})_3 + 2\text{H}_2\text{O} + \text{K}^+$ 2

5) $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4 + \text{BaS} \rightarrow \text{CuS} + \text{BaSO}_4 + 2\text{H}_2\text{O}$ 2

6) $\text{Ba}(\text{H}_2\text{PO}_4)_2 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + \text{Ba}(\text{OH})_2 + 2\text{H}_2\text{O}$ 2

8) $\text{NaHS} + 2\text{AgNO}_3 \rightarrow \text{Ag}_2\text{S}\downarrow + \text{NaNO}_3 + \text{HNO}_3$ 2

7) $\text{Ba}(\text{HSO}_3)_2 + 2\text{NaOH} \rightarrow \text{BaSO}_3 + \text{Na}_2\text{SO}_3 + 2\text{H}_2\text{O}$ 1

9) $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_3 + 4\text{KMnO}_4 \rightarrow \text{C}_6\text{H}_5\text{-COOK} + 4\text{MnO}_2\downarrow + \text{K}_2\text{CO}_3 + \text{KOH} + 2\text{H}_2\text{O}$ 2

10) $\text{FeO} + 3\text{Cl}_2 \rightarrow 2\text{FeO}_2\text{Cl}_2 + 2\text{FeCl}_3$ 2

③ $\text{C}_{24}\text{H}_{42}\text{O}_{21} + 3\text{H}_2\text{O} \xrightarrow{[\text{H}^+]}$ $\text{C}_6\text{H}_{12}\text{O}_6 + \text{C}_6\text{H}_{12}\text{O}_6$ 30

глюкоза фруктоза

$M(\text{C}_{24}\text{H}_{42}\text{O}_{21}) = 12 \cdot 24 + 42 + 16 \cdot 21 = 666 \text{ г/моль}$

$n(\text{C}_{24}\text{H}_{42}\text{O}_{21}) = \frac{13,3 \text{ г}}{666 \text{ г/моль}} = 0,02 \text{ моль}$

$M(\text{C}_6\text{H}_{12}\text{O}_6) = 12 \cdot 6 + 12 + 16 \cdot 6 = 180 \text{ г/моль}$

$n(\text{C}_6\text{H}_{12}\text{O}_6) = \frac{10,8 \text{ г}}{180 \text{ г/моль}} = 0,06 \text{ моль}$

$n(\text{C}_{24}\text{H}_{42}\text{O}_{21}) : n(\text{C}_6\text{H}_{12}\text{O}_6) = \frac{0,02}{0,06} = \frac{1}{3}$

в тетрасахарозе 3 остатка глюкозы и 1 остаток фруктозы