

Olimpiada de chimie
Etapa națională clasa a-IX-a

Proba Practică
BAREM DE CORECTARE

Tabel 1

Nr. flacon	Formula moleculară substanței identificate	Ecuția reacției chimice de identificare	Ecuția ionică a reacției de identificare	Observații experimentale
1	$\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$	$\text{FeCl}_3 + 3\text{NaOH} \rightarrow \text{Fe}(\text{OH})_3 \downarrow + 3\text{NaOH}$	$\text{Fe}^{3+} + 3\text{Cl}^- + 3\text{Na}^+ + 3\text{HO}^- \rightarrow \text{Fe}(\text{OH})_3 + 3\text{Na}^+ + 3\text{Cl}^-$	subst. crist., galbena, solubila; pp. rosu-brun
2	Na_2CO_3	$\text{Na}_2\text{CO}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{CO}_2 \uparrow + \text{H}_2\text{O}$	$2\text{Na}^+ + \text{CO}_3^{2-} + 2\text{H}^+ + 2\text{Cl}^- \rightarrow 2\text{Na}^+ + 2\text{Cl}^- + \text{CO}_2 \uparrow + \text{H}_2\text{O}$	subst. crist., alba, solubila; efervescenta
3	$\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$	$\text{BaCl}_2 + \text{Na}_2\text{CO}_3 \rightarrow \text{BaCO}_3 + 2\text{NaCl}$	$\text{Ba}^{2+} + 2\text{Cl}^- + 2\text{Na}^+ + \text{CO}_3^{2-} \rightarrow \text{BaCO}_3 + 2\text{Na}^+ + 2\text{Cl}^-$	subst. crist., alba, solubila; pp. alb
		$\text{BaCl}_2 + \text{CuSO}_4 \rightarrow \text{BaSO}_4 + \text{CuCl}_2$	$\text{Ba}^{2+} + 2\text{Cl}^- + \text{Cu}^{2+} + \text{SO}_4^{2-} \rightarrow \text{BaSO}_4 + \text{Cu}^{2+} + 2\text{Cl}^-$	
4	$\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$	$\text{Na}_3\text{PO}_4 + 3\text{AgNO}_3 \rightarrow \text{Ag}_3\text{PO}_4 + 3\text{NaNO}_3$	$3\text{Na}^+ + \text{PO}_4^{3-} + 3\text{Ag}^+ + 3\text{NO}_3^- \rightarrow \text{Ag}_3\text{PO}_4 + 3\text{Na}^+ + 3\text{NO}_3^-$	subst. crist., alba, solubila; pp. galben; pp. alb
		$\text{Na}_3\text{PO}_4 + 3\text{BaCl}_2 \rightarrow \text{Ba}_3(\text{PO}_4)_2 + 6\text{NaCl}$	$6\text{Na}^+ + 2\text{PO}_4^{3-} + 3\text{Ba}^{2+} + 6\text{Cl}^- \rightarrow \text{Ba}_3(\text{PO}_4)_2 + 6\text{Na}^+ + 6\text{Cl}^-$	
5	NH_4NO_3	$\text{NH}_4\text{NO}_3 + \text{NaOH} \rightarrow \text{NaNO}_3 + \text{NH}_3 \uparrow + \text{H}_2\text{O}$	$\text{NH}_4^+ + \text{NO}_3^- + \text{Na}^+ + \text{HO}^- \rightarrow \text{Na}^+ + \text{NO}_3^- + \text{NH}_3 \uparrow + \text{H}_2\text{O}$	subst. Crist., alba, solubila; gaz cu miros intepator
6	$\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$	$\text{NiCl}_2 + 2\text{NaOH} \rightarrow \text{Ni}(\text{OH})_2 + 2\text{NaCl}$	$\text{Ni}^{2+} + 2\text{Cl}^- + 2\text{Na}^+ + 2\text{HO}^- \rightarrow \text{Ni}(\text{OH})_2 + 2\text{Na}^+ + 2\text{Cl}^-$	subst. crist., verde, solubila; pp. verde

7	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	$\text{CuSO}_4 + 2\text{NaOH} \rightarrow \text{Cu}(\text{OH})_2 + \text{Na}_2\text{SO}_4$	$\text{Cu}^{2+} + \text{SO}_4^{2-} + 2\text{Na}^+ + 2\text{HO}^- \rightarrow \text{Cu}(\text{OH})_2 + 2\text{Na}^+ + \text{SO}_4^{2-}$	subst. crist., alba solubila; pp. albastru
8	$\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$	$\text{CoCl}_2 + 2\text{NaOH} \rightarrow \text{Co}(\text{OH})_2 + 2\text{NaCl}$	$\text{Co}^{2+} + 2\text{Cl}^- + 2\text{Na}^+ + 2\text{HO}^- \rightarrow \text{Co}(\text{OH})_2 + 2\text{Na}^+ + 2\text{Cl}^-$	subst.crist., violet, solubila; pp. albastru-roz
9	CaCO_3	$\text{CaCO}_3 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{CO}_2 \uparrow + \text{H}_2\text{O}$	$\text{CaCO}_3 + 2\text{H}^+ + 2\text{Cl}^- \rightarrow \text{Ca}^{2+} + 2\text{Cl}^- + \text{CO}_2 \uparrow + \text{H}_2\text{O}$	subst.amorfa, alba, insolubila; efervescenta
Subst. Amorf insolub	AgNO_3	$2\text{AgNO}_3 + 2\text{NaOH} \rightarrow \text{Ag}_2\text{O} + 2\text{NaNO}_3$	$2\text{Ag}^+ + 2\text{NO}_3^- + 2\text{Na}^+ + 2\text{HO}^- \rightarrow \text{Ag}_2\text{O} + 2\text{Na}^+ + 2\text{NO}_3^- + \text{H}_2\text{O}$	subst. crist., alba, solubila; pp. negru; pp.alb
		$\text{AgNO}_3 + \text{HCl} \rightarrow \text{AgCl} + \text{HNO}_3$	$\text{Ag}^+ + \text{NO}_3^- + \text{H}^+ + \text{Cl}^- \rightarrow \text{AgCl} + \text{H}^+ + \text{NO}_3^-$	
11	HCl	$\text{HCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{HNO}_3$	$\text{Ag}^+ + \text{NO}_3^- + \text{H}^+ + \text{Cl}^- \rightarrow \text{AgCl} + \text{H}^+ + \text{NO}_3^-$	solutie incolora, pH acid; pp.alb
12	NaOH	$\text{NaOH} + \text{MCl}_2 \rightarrow \text{M}(\text{OH})_2 + \text{NaCl}$	$2\text{Na}^+ + 2\text{HO}^- + \text{M}^{2+} + 2\text{Cl}^- \rightarrow \text{M}(\text{OH})_2 + 2\text{Na}^+ + 2\text{Cl}^-$	sol. incolora, pH bazic; pp.(culoare)

Soluția	Nr. flacon	Comportare față de	
		metil-oranje	fenolftaleină
HCl	11	roșu	incolor
NaOH	12	galben	roșu-carmin

Punctaj:

Formula substanței identificate: 1 punct (1x 12= 12p)

Ecuatia chimica: 2 puncte (2x12=24p)

Ecuatia ionica: 2 puncte (2x12=24p)

Observatii: 2 puncte (2x12 =24)

Comportarea fata de un indicator: 3 puncte (2x3=6p)

Puncte din oficiu ;10 p

Lector Dr. Violeta Tudor