

Olimpiada Interdisciplinară Științele Pământului

Etapa județeană – 12 martie 2022

BAREM - CHIMIE

**A.** **4p**

1.  $1s^2 2s^2 2p^6 3s^2 3p^5$  1p

Sarcina nucleară +17 1p

2.  $A_{Cl} = 35 \cdot 0,755 + 37 \cdot 0,245 = 35,49$ . 2p

**B.** **4p**

1.  $n_{HCl} = 0,5$  moli,  $n_{NaOH} = 0,6$  moli  $\rightarrow$  0,1 moli NaOH exces,  $V_s$  final= 1L,  $[HO^-] = 10^{-1}M$   
 $\rightarrow [H_3O^+] = 10^{-13} M \rightarrow pH = 13$  3p

2. mediu bazic, fenolftaleina -roșu carmin 1p

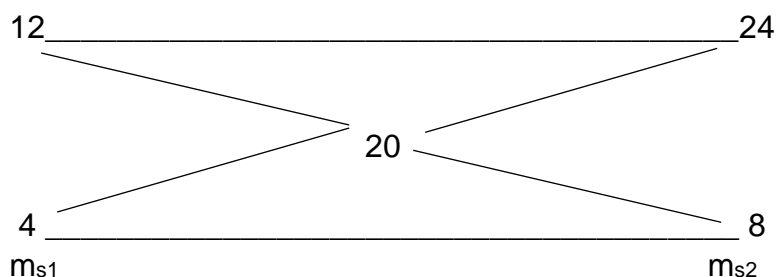
**C.** **6p**

1.  $CuSO_4 \cdot xH_2O$   $M = 160 + x \cdot 18$   
 $160 + x \cdot 18 \dots\dots\dots 160 \text{ g } CuSO_4$   
 $5 \text{ g } \dots\dots\dots 3,2 \text{ g}$

$x = 5 \rightarrow CuSO_4 \cdot 5H_2O$  2p

2. Raportul masic Cu:S:O = 2:1:2. 2p

3.



$m_{s1}/m_{s2} = 4:8 = 1:2$  2p

**D.** **5p**

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1. Zn – anod  
Cu - catod. 2p

2.

anod (-)  $\text{Zn} \xrightarrow{-2e^-} \text{Zn}^{+2}$  se oxidează 1p

catod (+)  $\text{Cu}^{+2} \xrightarrow{+2e^-} \text{Cu}$  se reduce 1p

ecuația reacției totale  $\text{Zn} + \text{Cu}^{+2} \rightarrow \text{Zn}^{+2} + \text{Cu}$  1p

**E.** **6p**

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1.  $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_3$  1p

$2 \text{NO}_2 + \text{H}_2\text{O} \rightarrow \text{HNO}_3 + \text{HNO}_2$  1p

2. N  $7/14 = 0,5$  | : 0,25 = 2

O  $4/16 = 0,25$  | : 0,25 = 1

$\text{N}_2\text{O}$  2p

3. două efecte ale ploilor acide asupra mediului 2p