Расчет pH/ pP есептеу

1. 0.1M NaOH pH=13.00
2. 0.1 M $NaHCO_3$ pH= ½ $pK_{a(1)}$ + ½ $pK_{a(2)}$ = 8.34
3. 0.1 M Na_2CO_3 pH= 11.66 $[H^+] = \frac{10^{-14}}{\sqrt{2*10^{-4}*0.1}}$=2.25*$10^{-12}$ моль/л
4. Буферный раствор, фосфатный (H_3PO_4: $K_{a(1)}=7\cdot10^{-3}$; $K_{a(2)}=6\cdot10^{-8}$; $K_{a(3)}=5\cdot10^{-13}$) H_3PO_4/ $H_2PO_4^-$: pH= $pK_{a(1)}$ + lg($C_{соль}/C_{кисл}$) = 2.15
5. Na_2SO_4 - pH = pOH=7.00

X **-** NH_4Cl, $BaCl_2$, $MnCl_2$

Y **-** KCl, $MgSO_4$, $ZnCl_2$

Химические реакции 44x0,23= 10 балл

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1. $2KCl + Na_3[Co(NO_2)_6] = K_2Na[Co(NO_2)_6]\downarrow + 2NaCl$
2. $2K^+ + Na^+ + [Co(NO_2)_6]^{3-} = K_2Na[Co(NO_2)_6]\downarrow$

3. $2NH_4Cl + Na_3[Co(NO_2)_6] = (NH_4)_2Na[Co(NO_2)_6]\downarrow + 2NaCl$
4. $2NH_4^+ + Na^+ + [Co(NO_2)_6]^{3-} = (NH_4)_2Na[Co(NO_2)_6]\downarrow$
5. $NH_4Cl + NaOH \xrightarrow{t^0} NH_3\uparrow + NaCl + H_2O$
6. $NH_4^+ + OH^- = NH_3\uparrow + H_2O$

7. $ZnCl_2 + 2NaOH = Zn(OH)_2\downarrow + 2NaCl$
8. $Zn^{2+} + 2NaOH = Zn(OH)_2\downarrow$
9. $Zn(OH)_2\downarrow + 2NaOH = Na_2[Zn(OH)_4]$
10. $Zn(OH)_2 + 2OH^- = [Zn(OH)_4]^{2-}$
11. $ZnCl_2 + 2NH_4OH \rightarrow Zn(OH)_2\downarrow + 2NH_4Cl$
12. $Zn^{2+} + 2OH^- = Zn(OH)_2\downarrow$
13. $Zn(OH)_2\downarrow + 4NH_4OH \rightarrow [Zn(NH_3)_4](OH)_2 + 4H_2O$
14. $Zn(OH)_2\downarrow + 4NH_4^+ = [Zn(NH_3)_4]^{2+} + 2OH^-$
15. $3ZnCl_2 + 2Na_2HPO_4 = Zn_3(PO_4)_2\downarrow + 4NaCl + 2HCl$
16. $3Zn^{2+} + 2HPO_4^{2-} = Zn_3(PO_4)_2\downarrow + 2H^+$
17. $2ZnCl_2 + K_4[Fe(CN)_6] \rightarrow Zn_2[Fe(CN)_6]\downarrow + 4KCl$
18. $2Zn^{2+} + [Fe(CN)_6]^{4-} \rightarrow Zn_2[Fe(CN)_6]\downarrow$
19. $ZnCl_2 + K_2CrO_4 = ZnCrO_4\downarrow + 2KCl$
20. $Zn^{2+} + CrO_4^{2-} = ZnCrO_4$

21. $3MgCl_2 + 2Na_2HPO_4 = Mg_3(PO_4)_2\downarrow + 4NaCl + 2HCl$
22. $3Mg^{2+} + 2HPO_4^{2-} = Mg_3(PO_4)_2\downarrow + 2H^+$
23. $MgCl_2 + NaOH = NaCl + Mg(OH)_2\downarrow$б.
24. $Mg^{2+} + OH^- = Mg(OH)_2\downarrow$
25. $MgCl_2 + 2NH_4OH \rightarrow Mg(OH)_2\downarrow + 2NH_4Cl$
26. $Mg^{2+} + 2NH_4OH = Mg(OH)_2\downarrow + 2NH_4^+$

27. $3MnCl_2 + 2Na_2HPO_4 = Mn_3(PO_4)_2 \downarrow + 4NaCl + 2HCl$
28. $3Mn^{2+} + 2HPO_4^{2-} = Mn_3(PO_4)_2 \downarrow + 2H^+$
29. $MnCl_2 + 2NaOH = Mn(OH)_2\downarrow + 2NaCl$
30. $Mn^{2+} + OH^- = Mn(OH)_2\downarrow$
31. $2MnCl_2 + K_4[Fe(CN)_6] \rightarrow Mn_2[Fe(CN)_6]\downarrow + 4KCl$
32. $2Mn^{2+} + [Fe(CN)_6]^{4-} \rightarrow Mn_2[Fe(CN)_6]\downarrow$
33. $MnCl_2 + K_2CrO_4 = MnCrO_4\downarrow + 2KCl$
34. $Mn^{2+} + CrO_4^{2-} = MnCrO_4$
35. $MnCl_2 + 2NH_4OH \rightarrow Mn(OH)_2\downarrow + 2NH_4Cl$
36. $Mn^{2+} + 2NH_4OH^- = Mn(OH)_2\downarrow + 2NH_4^+$
37. $2Mn(OH)_2\downarrow + O_2 = 2MnO(OH)_2\downarrow$
38. $Mn^{2+} - 2e^- \rightarrow Mn^{4+}$
    $O_2 + 4e^- \rightarrow 2O^{2-}$

39. $BaCl_2 + H_2SO_4 = BaSO_4\downarrow + 2HCl$
40. $Ba^{2+} + SO_4^{2-} = BaSO_4\downarrow$
41. $BaCl_2 + K_2CrO_4 \rightarrow BaCrO_4\downarrow + 2KCl$
42. $Ba^{2+} + CrO_4^{2-} = BaCrO_4 \downarrow$
43. $3BaCl_2 + 2Na_2HPO_4 = Ba_3(PO_4)_2 \downarrow + 4NaCl + 2HCl$
44. $3Ba^{2+} + 2HPO_4^{2-} = Ba_3(PO_4)_2 \downarrow + 2H^+$