1

$$mol(Zn_2Fe(CN)_6) = \frac{mass}{M.mass} = \frac{0,438}{342,70}$$

$$mol(Zn_2Fe(CN)_6) = 0,001278$$

(2 mol) يحتوي على ($Zn_2Fe(CN)_6$) الـ

من الـ (Zn)

$$mol(Zn) = 2 \times 0,001278 = 0,0025562 \text{ mol}$$

$$mass(Zn) = mol \times M.mass = 0,0025582 \times 65,37$$

$$mass(Zn) = 0,167 \text{ g}$$

2

$$molality = \frac{mol\ solute}{kg\ solvent}$$

$$1,5 \times 10^{-3} = \frac{mole\ solute}{1}$$

$$mole\ solute = 1,5 \times 10^{-3}$$

$$mass\ solute = 1,5 \times 10^{-3} \times 58,5 = 0,08775$$

$$mass\ solvent = 1\ kg = 1000\ g$$

$$ppm = \frac{mass\ solute}{total\ mass} \times 10^6 = \frac{0,08775}{1000 + 0,08775} \times 10^6$$

$$ppm = 88\ ppm$$

3]

(A) $K_{sp} = [Ag^+][Cl^-]$

$1,8 \times 10^{-10} = s^2$

$s = 1,34 \times 10^{-5}$

(B) $K_{sp} = [Ag^+][I^-]$

$8,3 \times 10^{-17} = s^2$

$s = 9,11 \times 10^{-9}$

(C) $K_{sp} = [Ag^+][Br^-]$

$5 \times 10^{-13} = s^2$

$s = 7,07 \times 10^{-7}$

(D) $K_{sp} = [Ag^+]^2[CrO_4^{-}]$

$1,2 \times 10^{-12} = 4 s^3$

$s = 0,7 \times 10^{-4}$

اعلى قيمة (s) هي جواب الصحيح

(D)

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(4)

$La(IO_3)_3 \longrightarrow La^{+3} + 3(IO_3^-)$

$3[La^{+3}] = (IO_3^-)$

$[La^{+3}] = \frac{1 \times 10^{-11}}{3}$

$[La^{+3}] = 0,33 \times 10^{-11}$

جميع الخيارات خاطئة ،

5) نفس سؤال (1)

6) (C)

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7) $CI = \bar{x} \pm \frac{t\,s}{\sqrt{n}}$

$\bar{x} = \frac{139,2 + 139,8 + 140,1 + 139,4}{4}$

$\bar{x} = 139,6$

$s = \sqrt{\frac{\sum(x_1 - \bar{x})}{n-1}}$

$s = 0,404$

$CI = 139,6 \pm \frac{5,84 \times 0,404}{\sqrt{4}}$

$CI = 139,6 \pm 1,2$

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8) $K_{sp} = [Hg_2^{+2}][Cl^-]^2$

$1,2 \times 10^{-18} = (S)[0,06]^2$

$S = [Hg_2^{+2}] = 3,3 \times 10^{-16} M$

---

9) $\bar{x} = \frac{23,4 + 23,2 + 22,8 + 26 + 24 + 23}{6}$

$\bar{x} = 23,7$

$s = \sqrt{\frac{\sum(x_1 - \bar{x})}{n-1}} = 1,2$

(A) 23,7 and 1,2

10

أولاً نحل ما داخل الأقواس

① 143,7 - 121 = 23

② 23 × 2,06 = 47

③ 47 ÷ 0,600 = 78

(C) two

11

$K_{sp}(AgCl) = [Ag^+][Cl^-]$

$1,6 \times 10^{-10} = [Ag^+][0,04]$

$Ag^+ = 4,0 \times 10^{-10} = 4 \times 10^{-9}$

$K_{sp}(AgBr) = [Ag^+][Br^-]$

$7,7 \times 10^{-13} = [Ag^+][0,04]$

$Ag^+ = 1,9 \times 10^{-11}$

(B) $1,9 \times 10^{-11} M < [Ag^+] < 4 \times 10^{-9} M$

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12 (B)

13 (10) مكرر نفس سؤال

14 ① $mol(Th^{+4}) = M \cdot V_{(l)} = \frac{50}{1000} \times 0,0325$

$mol(Th^{+4}) = 0,001625$

② $1\ mol\ Th^{+4} \longrightarrow 4\ mol\ f^-$

$0,001625 \longrightarrow X\ mol\ f^-$

$mol\ f^- = 0,0065 = mol(Hf)$

③ $mol\ Hf\ 20\%\ excess = 0,0065 \times 1,2$

$mol(Hf)\ 20\%\ excess = 0,0078$

20% excess $= \frac{20+100}{100} = 1,2$

④ $mass(Hf) = mol * M.mass$

$mass(Hf) = 0,0078 \times 20$

$mass(Hf) = 0,156$

⑤ $2,5\% \Rightarrow \left(\frac{2,5}{100}\right)$ ← ratio

$mass\ of\ 2,5\%\ (Hf)\ solution = \frac{0,156}{\frac{2,5}{100}}$

$mass\ of\ 2,5\%\ (Hf)\ solution = 6,24\ g$

15

~~M.V = M.V~~
~~(Na_2S)~~

$$M \times V(Na_2S) = M \times V(AgNO_3)$$

$$(0,26)\,V = (40)(0,315)$$

$$V = 48,4\ mL$$

لكن حسب المعادلة (مول واحد من Na_2S) تفاعل مع (2 مول من $AgNO_3$)

اذن الـ (V) يساوي:

$$\frac{48,4}{2} = 24,2\ mL$$

الجواب (ج)

16

$$\Phi = \frac{[SO_3]^2}{[SO_2]^2[O_2]} = \frac{(1)^2}{(0,1)^2(0,1)} = 1 \times 10^5$$

$$\Phi = 1 \times 10^5 \qquad Kc = 4,3 \times 18$$

التفاعل غير متزن اذن $\Phi < Kc$ تكون متزن اذا كانوا متساويات

C) No, left to right