

# Pembahasan Latihan Soal

## TKD Saintek - Kimia



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**Latihan TKD Saintek Memuat materi :**

- 1) Kemampuan Matematika
- 2) Kemampuan Biologi
- 3) Kemampuan Kimia
- 4) Kemampuan Fisika

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Untuk Persiapan Ujian Tulis

[Sbmptn 2018](http://ujiantulis.com)

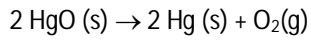
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# 2

## Pembahasan Soal

Disusun oleh : Team [ujiantulis.com](http://ujiantulis.com)

1. **Jawab: A**



$$86,4 \text{ g} \qquad 3,2 \text{ g} = \frac{3,2}{32} =$$

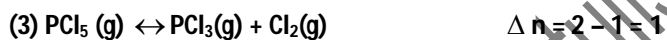
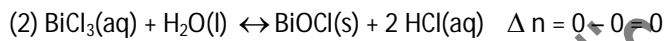
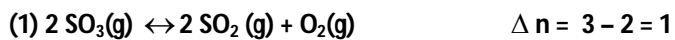
$$0,2 \text{ mol} \qquad 0,1 \text{ mol}$$

$$\text{Kadar HgO dalam cuplikan} = \frac{0,2 \times 216 \text{ g}}{86,4 \text{ g}} \times 100 \% = 50 \%$$

2. **Jawab: B**

$K_p = K_c(RT)^{\Delta n}$  ,  $\Delta n$  = jumlah koefisien gas sebelah kanan – sebelah kiri

$$K_p = K_c(RT) \quad , \Delta n = 1$$



3. **Jawab: E**

Nomor atom = jumlah proton = jumlah elektron = 29

Konfigurasi elektron atom  ${}_{29}\text{L}$  :  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^1$

Konfigurasi elektron ion  ${}_{29}\text{L}^+$  :  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^0$

[Ar]  $3d^{10}$

4. **Jawab: B**

Rumus molekul  $\text{C}_4\text{H}_8\text{O}$

Rumus Umum :  $\text{C}_n\text{H}_{2n}\text{O}$

$\swarrow$  R - C HO : alkanal/aldehida  
 $\searrow$  R - CO - R : alkanon/keton

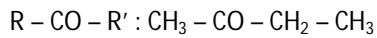
4    3    2    1                      3    2    1

R - CHO :  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CHO}$  dan  $\text{CH}_3 - \underset{\text{I}}{\text{CH}} - \text{CHO}$

Butanal

I

$\text{CH}_3$  2 - metilpropanal



Butanon

Jumlah isomer = 3

5. **Jawab: D**

Air sadah adalah air yang mengandung ion – ion logam  $Ca^{2+}$  dan  $Mg^{2+}$ .

a. Air sadah tetap mengandung garam – garam :  $CaCl_2$ ,  $MgCl_2$ ,  $CaSO_4$ ,  $MgSO_4$

b. Air sadah sementara mengandung garam – garam :  $Ca(HCO_3)_2$ ,  $Mg(HCO_3)_2$

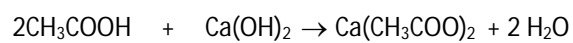
Cara menghilangkan kesadahan :

**a. Air sadah tetap : ditambah soda,  $Na_2CO_3$  (natrium karbonat)**

b. Air sadah sementara : 1. dipanaskan sampai mendidih

2. ditambah air kapur,  $Ca(OH)_2$

6. **Jawab: A**



50 mL. 0,2 M      50 mL. 0,05 M

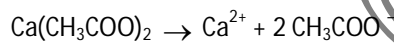
Mula-mula : 10 mmol      2,5 mmol

Bereaksi : 5 mmol    ~    2,5 mmol    ~    2,5 mmol

Sisa : 5 mmol      0      2,5 mmol

$CH_3COOH$

$Ca(CH_3COO)_2$  : Penyangga bersifat asam



2,5 mmol      ~      5 mmol

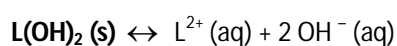
$$\text{Rumus : } [H^+] = K_a \times \frac{[CH_3COOH]}{[CH_3COO^-]} = 2,0 \times 10^{-5} \times \frac{5 \text{ mmol}/100 \text{ mL}}{5 \text{ mmol}/100 \text{ mL}} = 2,0 \times 10^{-5} \text{ M}$$

$$pH = 5 - \log 2$$

7. **Jawab: B**

Larutan jenuh  $L(OH)_2$  :  $pH = 9 + 2 \log 2 = 9 + \log 4$

$$pOH = 5 - \log 4 \rightarrow [OH^-] = 4 \times 10^{-5} \text{ M}$$



$$S = 2 \times 10^{-5} \text{ M} \quad \leftarrow \quad 4 \times 10^{-5} \text{ M}$$

$$n = 3, K_{sp} L(OH)_2 = 4S^3 = 4(2 \times 10^{-5})^3 = 32 \times 10^{-15} = 3,2 \times 10^{-14}$$

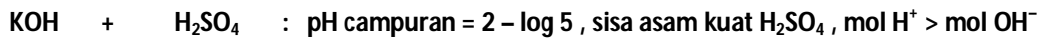
8. **Jawab: B**

$$t_{1/2} = 10 \text{ tahun}, T = \text{lama meluruh} = 60 \text{ tahun} \rightarrow n = \frac{T}{t_{1/2}} = \frac{60}{10} = 6$$

$$\text{Sisa} = N_s = \left(\frac{1}{2}\right)^n \times N_o = \left(\frac{1}{2}\right)^6 \times 64 = \frac{1}{64} \times 64 = 1 \text{ gram}$$

$$\text{Meluruh} = N_o - N_s = 64 - 1 = 63 \text{ gram}$$

9. **Jawab: D**



100 mL 0,1 M    100 mL xM    [H<sup>+</sup>] sisa = 5 x 10<sup>-2</sup> M

Volume campuran = 200 mL

**mmol H<sup>+</sup> sisa = 200 x 5 x 10<sup>-2</sup> = 10 mmol**

100 mL KOH 0,1 M = 10 mmol → **OH<sup>-</sup> = 10 mmol**

100 mL H<sub>2</sub>SO<sub>4</sub> x M = 100 x mmol → **H<sup>+</sup> = 200x mmol**

**mmol H<sup>+</sup> sisa = mmol H<sup>+</sup> - mmol OH<sup>-</sup>**

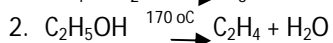
= (200 x) - (10) = 200 x - 10 = 10

200 x = 20, **x = 0,1 M H<sub>2</sub>SO<sub>4</sub>**

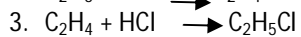
10. **Jawab: C**



(reaksi substitusi)



(reaksi eliminasi)



(reaksi adisi/penjenuhan)



(reaksi substitusi)

11. **Jawab: C**

Konfigurasi elektron ion X<sup>3-</sup> : 1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> 3s<sup>2</sup> 3p<sup>6</sup> (menerima 3 elektron)

Konfigurasi elektron atom unsur X : 1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> **3s<sup>2</sup> 3p<sup>3</sup>**

↓

**Perioda 3, golongan VA**

12. **Jawab: E**

$$M = \frac{10 \times \% \text{ massa} \times \text{massa jenis}}{Mr} = \frac{10 \times 18,25 \times 1,04}{36,5} = 5,2 \text{ M HCl}$$

13. **Jawab: C**

Isotonik : tekanan osmotik sama : π<sub>1</sub> = π<sub>2</sub>

$$M_1 R T i_1 = M_2 R T i_2 \text{ (RT sama)}$$

$$M_1 \times i_1 = M_2 \times i_2$$

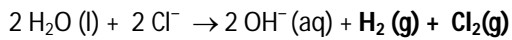
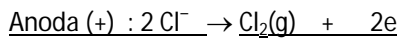
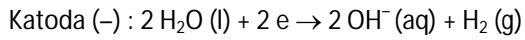
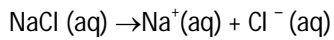
Urea                      NaOH

$$\frac{6}{60} \times \frac{1000}{500} \times 1 = \frac{x}{40} \times \frac{1000}{200} \times 2 \quad (\text{i dari NaOH} = 2)$$

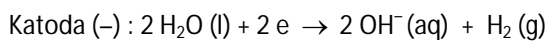
$$0,2 = \frac{x}{4}, \quad x = 0,8 \text{ gram NaOH}$$

14. **Jawab: C**

Elektrolisis larutan NaCl/C :



$$5,6 \text{ L gas H}_2 \text{ (STP)} = \frac{5,6}{22,4} = 0,25 \text{ mol H}_2$$

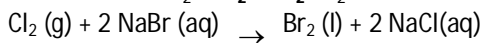


$$0,5 \text{ mol e} \quad \sim \longleftarrow \quad 0,25 \text{ mol H}_2$$

$$= 0,5 \text{ F}$$

15. **Jawab: A**

Sifat oksidator  $\text{F}_2 > \text{Cl}_2 > \text{Br}_2 > \text{I}_2$



Pernyataan benar, alasan benar, keduanya ada hubungan sebab akibat.