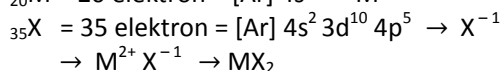
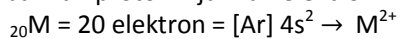


PEMBAHASAN
SELEKSI NASIONAL MASUK PERGURUAN TINGGI NEGERI (SNMPTN)

Mata Pelajaran	: Kimia
Tanggal	: 02 Juli 2009
Kode Soal	: 176
Area	: Jakarta, Metro, Palembang, Bogor, Pekanbaru, Lampung

46. **Jawab : B**

Jumlah proton = jumlah elektron = nomor atom



47. **Jawab : C**

Titik didih $\text{NH}_3 > \text{PH}_3$, karena **ikatan Van der Waals** antar molekul NH_3 lebih kuat dibanding antar molekul PH_3 .

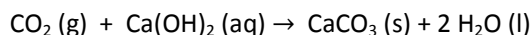
48. **Jawab : C**

Massa cuplikan $\text{Al}_2\text{O}_3 = 204 \text{ g}$

$$\text{Massa Al} = 54 \text{ g} \rightarrow \text{massa Al}_2\text{O}_3 = \frac{Mr \text{ Al}_2\text{O}_3}{2 \times Ar \text{ Al}} \times \text{massa Al} = \frac{102}{54} \times 54 = 102 \text{ g}$$

$$\text{Persentase Al}_2\text{O}_3 \text{ dalam cuplikan} = \frac{102}{204} \times 100 \% = 50 \%$$

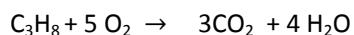
49. **Jawab : D**



2,24 L (STP)

$$\frac{2,24}{22,4} = 0,1 \text{ mol} \quad \sim \quad 0,1 \text{ mol} = 0,1 \times 100 \text{ g} = 10 \text{ g CaCO}_3$$

50. **Jawab : A**



$$\Delta H_f : z \quad 0 \quad 3y \quad 4x$$

Hukum Hess : $\Delta H \text{ reaksi} = \Delta H_f \text{ hasil} - \Delta H_f \text{ pereaksi}$

$$= 3y + 4x - z$$

51. **Jawab : E**

$$1 \text{ gram gas C}_2\text{H}_2 = \frac{1}{26} \text{ mol}$$

Terjadi kenaikan suhu, reaksi eksoterm, $\Delta H = (-)$

$$\Delta H = - m \times c \times \Delta t = - 1 \times 4,2 \times 12 \text{ kJ} / \frac{1}{26} \text{ mol}$$

$$= - 1310,4 \text{ kJ/mol}$$

52. Jawab : E

No	Konsentrasi		Waktu reaksi (detik)
	[A] molar	[B] molar	
1	0,25	0,25	160
2	0,50	0,25	80
3	0,50	0,50	20
4	1,0	1,0	x

[A] sama, percobaan 2 dan 3 : $V = k [B]^x$
 $\frac{V_2}{V_3} = \frac{t_3}{t_2} = \left[\frac{B_2}{B_3} \right]^x \rightarrow \frac{20}{80} = \frac{1}{4} = \left[\frac{1}{2} \right]^x \rightarrow x = 2$

[B] sama, percobaan 1 dan 2 : $V = k [A]^y$
 $\frac{V_1}{V_2} = \frac{t_2}{t_1} = \left[\frac{A_1}{A_2} \right]^y \rightarrow \frac{160}{80} = \frac{1}{2} = \left[\frac{1}{2} \right]^y \rightarrow y = 1$
 $V = k [A][B]^2$

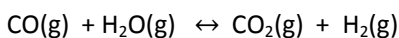
Ditanya : $t_4 = \dots$?

Jawab :

percobaan 2 dan 4 :

$$\frac{V_2}{V_4} = \frac{t_4}{t_2} = \left[\frac{A_2}{A_4} \right] \left[\frac{B_2}{B_4} \right]^2 \rightarrow \frac{80}{x} = \left[\frac{1}{2} \right] \left[\frac{1}{4} \right]^2 = \frac{1}{32} \rightarrow x = \frac{80}{32} = 2,5 \text{ detik}$$

53. Jawab : C



Kc pada suhu 500 °C adalah 4. pada temperatur tersebut , nilai Kp :

$$K_p = K_c (RT)^{\Delta n} \rightarrow \Delta n = \text{koefisien gas kanan} - \text{kiri} = 2 - 2 = 0$$

$$K_p = K_c (RT)^0 \rightarrow K_p = K_c = 4$$

54. Jawab : B

0,1 mol gula dalam 1 kg air $\rightarrow \Delta T_f = t \text{ } ^\circ\text{C}$

0,1 mol Na_2SO_4 dalam jumlah air yang sama mempunyai $\Delta T_f = \dots$

Molal = mol terlarut dalam 1 kg pelarut = mol terlarut/kg pelarut

Rumus :

$$\frac{\Delta T_{f \text{ gula}}}{\Delta T_{f \text{ Na}_2\text{SO}_4}} = \frac{\text{molal gula} \times K_f \times i}{\text{molal Na}_2\text{SO}_4 \times K_f \times i}$$

$$\frac{t}{\Delta T_{f \text{ Na}_2\text{SO}_4}} = \frac{\frac{0,1}{1} \times 1}{\frac{0,1}{1} \times 3} \rightarrow \Delta T_{f \text{ Na}_2\text{SO}_4} = 3t \text{ } ^\circ\text{C}$$

55. **Jawab : E**

Larutan berikut yang memiliki pH sama dengan CH_3COOH 0,1 M ($K_a = 10^{-5}$) :

$$[\text{H}^+] = \sqrt{K_a \times M} = \sqrt{10^{-5} \times 0,1} = 10^{-3} \text{ M} \rightarrow \text{pH} = 3$$

(A) HCl 0,3 M yang diencerkan 10 kali :

$$V_1 M_1 = V_2 M_2$$

$$1 \times 0,3 = 10 \times M_2 \rightarrow M_2 = 0,03 \text{ M HCl} = 3 \times 10^{-2} \text{ M HCl}$$

$$[\text{H}^+] = 3 \times 10^{-2} \text{ M} \rightarrow \text{pH} = 2 - \log 3$$

(B) HCl 0,2 M yang diencerkan 10 kali :

$$1 \times 0,2 = 10 \times M_2 \rightarrow M_2 = 0,02 \text{ M HCl} = 2 \times 10^{-2} \text{ M HCl}$$

$$[\text{H}^+] = 2 \times 10^{-2} \text{ M} \rightarrow \text{pH} = 2 - \log 2$$

(C) HCl 0,2 M yang diencerkan 100 kali :

$$1 \times 0,2 = 100 \times M_2 \rightarrow M_2 = 0,002 \text{ M HCl} = 2 \times 10^{-3} \text{ M HCl}$$

$$[\text{H}^+] = 2 \times 10^{-3} \text{ M} \rightarrow \text{pH} = 3 - \log 2$$

(D) HCl 0,1 M yang diencerkan 10 kali :

$$1 \times 0,1 = 10 \times M_2 \rightarrow M_2 = 0,01 \text{ M HCl} = 1 \times 10^{-2} \text{ M HCl}$$

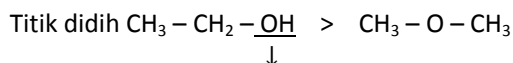
$$[\text{H}^+] = 1 \times 10^{-2} \text{ M} \rightarrow \text{pH} = 2$$

(E) HCl 0,1 M yang diencerkan 100 kali :

$$1 \times 0,1 = 100 \times M_2 \rightarrow M_2 = 0,001 \text{ M HCl} = 1 \times 10^{-3} \text{ M HCl}$$

$$[\text{H}^+] = 1 \times 10^{-3} \text{ M} \rightarrow \text{pH} = 3$$

56. **Jawab : A**



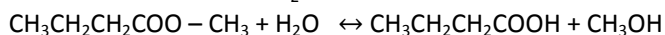
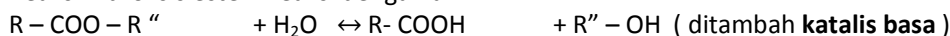
Terdapat ikatan hidrogen .

Senyawa yang mempunyai ikatan hidrogen mempunyai titik didih tinggi.

Pernyataan benar, alasan benar, ada hubungan sebab akibat.

57. **Jawab : C**

Reaksi hidrolisis ester : reaksi dengan air :



Metilbutanoat asam butanoat methanol

Pernyataan benar, alasan salah.

58. **Jawab : tidak ada jawaban**

Konsep :

1. Kelarutan **dalam air selalu lebih besar** dibandingkan dengan kelarutan ion sejenis.

2. Makin besar konsentrasi pelarut ion sejenis , kelarutan makin kecil.

Garam AgI adalah garam yang sukar larut dalam air. Kelarutan garam ini akan bertambah besar jika ke dalam larutan ditambahkan ...

(1) AgNO_3 : Kelarutan AgI dalam AgNO_3 , dalam ion sejenis Ag^+ : kelarutan lebih kecil

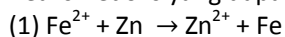
(2) KI : Kelarutan AgI dalam KI , dalam ion sejenis I^- : kelarutan lebih kecil

(3) H_2SO_4

(4) NH_3 : $\text{AgI (s)} + 2 \text{NH}_3 \text{ (aq)} \rightarrow$ tidak larut, tidak bereaksi.

59. Jawab : B

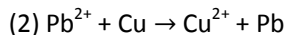
Reaksi redoks yang dapat terjadi secara spontan adalah



$$E^{\circ} \text{ sel} = E^{\circ} \text{ reduksi} - E^{\circ} \text{ oksidasi} = (-0,41) - (-0,76)$$

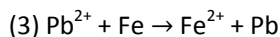
$$\text{Fe} \qquad \qquad \text{Zn}$$

$$= +0,35 \text{ volt (reaksi berlangsung spontan)}$$



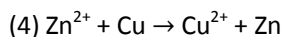
$$E^{\circ} \text{ sel} = E^{\circ} \text{ reduksi} - E^{\circ} \text{ oksidasi} = (-0,13) - (+0,34)$$

$$= -0,47 \text{ volt (reaksi tidak berlangsung spontan)}$$



$$E^{\circ} \text{ sel} = E^{\circ} \text{ reduksi} - E^{\circ} \text{ oksidasi} = (-0,13) - (-0,41)$$

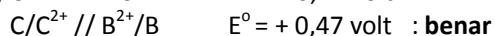
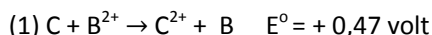
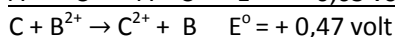
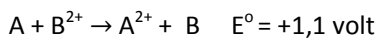
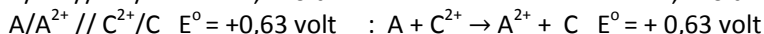
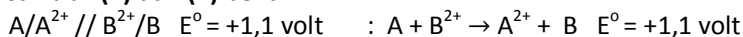
$$= +0,28 \text{ volt (reaksi berlangsung spontan)}$$



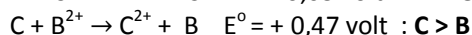
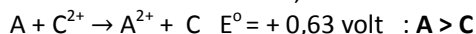
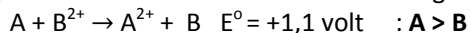
$$E^{\circ} \text{ sel} = E^{\circ} \text{ reduksi} - E^{\circ} \text{ oksidasi} = (-0,76) - (+0,34)$$

$$= -1,10 \text{ volt (reaksi tidak berlangsung spontan)}$$

60. Jawab : (1) dan (2) benar



(2) A adalah reduktor lebih kuat dibandingkan B dan C : benar



Kesimpulan : kereaktifan logam $\text{A} > \text{C} > \text{B}$

↓

$E^{\circ} \text{ reduksi} \quad \text{A} < \text{C} < \text{B}$

Reduktor $\text{A} > \text{C} > \text{B}$

Oksidator $\text{B} > \text{C} > \text{A}$

(3) C adalah oksidator terkuat : salah

Oksidator $\text{B} > \text{C} > \text{A}$

(4) Urutan potensial reduksi standar ($E^{\circ} \text{ reduksi}$) $\text{A}^{2+}/\text{A} > \text{B}^{2+}/\text{B} > \text{C}^{2+}/\text{C}$: salah

kereaktifan logam $\text{A} > \text{C} > \text{B}$

$E^{\circ} \text{ reduksi} \quad \text{A} < \text{C} < \text{B}$