

PEMBAHASAN

SELEKSI NASIONAL MASUK PERGURUAN TINGGI NEGERI (SNMPTN)

Mata Pelajaran : Kimia
 Tanggal : 17 Juni 2010
 Kode Soal : 548

31. $26 \text{ Fe (18 Ar) } 4s^2 3d^6$
 $3d^6 4s^2$
 Fe^{+3} : Fe yang melepas 3e dari kulit terluar
 : (18 Ar) $3d^5$

| | | | | |
|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 |
|---|---|---|---|---|

Jawab : B

32. $3 \text{ TiO}_2 + 4 \text{ BrF}_3 \rightarrow 3 \text{ TiF}_4 + 2 \text{ Br}_2 + 3 \text{ O}_2$

mula-mula:

1.6 gr

reaksi:

$$5 \cdot 10^{-3} \text{ mol} \quad \text{mol} = \frac{0,16 \text{ gr}}{32}$$

$$\text{massa} = 5 \times 10^{-3} \times 80 = 5 \times 10^{-3} \text{ mol}$$

$$= 0,4 \text{ gr}$$

$$\% \text{ TiO}_2 = \frac{0,4 \text{ gr}}{1,6 \text{ gr}} \times 100\% = 25\%$$

Jawab : E

33. Dalam 15,9 gr Cu_2S terdapat Cu = $\frac{2 \times \text{Ar Cu}}{\text{Mr}} \times \text{Berat Cu}_2\text{S}$
 $= \frac{2 \times 63,5}{159} \times 15,9$
 $= \frac{127}{159} \times 15,9 = 12,7 \text{ gram}$

Jawab : B

34. $\text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2 \rightarrow 6 \text{ H}_2\text{O} + 6 \text{ CO}_2$ $\Delta H = -2820$

Q = 18 gr glukosa $\sim -2820 \text{ kJ} \sim 0,1 \text{ mol}$ glukosauntuk 75 kg $\sim Q = m c \Delta t$

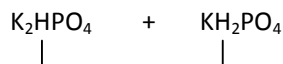
$$282 = 75 \text{ kg} \times 4 \times \Delta t$$

$$\Delta t = \frac{282}{300} = 0,94 \text{ K}$$

Jawab : B

| | |
|---------------------------|-----------------------|
| 35. Asam | Ka |
| H_3PO_4 | $7,2 \times 10^{-3}$ |
| H_2PO_4^- | $6,3 \times 10^{-8}$ |
| HPO_4^{2-} | $4,2 \times 10^{-13}$ |

Jika konsentrasi asam dan basa konjugasi 1 : 1
Pasangan yang cocok untuk penyangga pH sekitar 7.



Selisih 1 atom H sehingga berkonjugasi

$$[\text{H}^+] = K_a \cdot \frac{[\text{H}_2\text{PO}_4^-]}{[\text{HPO}_4^{2-}]} = 6,3 \times 10^{-8} \text{ M} \rightarrow \boxed{\text{pH} = 8 - \log 6,3}$$

Jawab : D

| | | | | | |
|-----------|---|---|----------------------|---------------|--|
| 36. | CH_3COOH | + | NaOH | \rightarrow | $\text{CH}_3\text{COONa} + \text{H}_2\text{O}$ |
| mula-mula | 70 - 0,1 7 mmol | | 100 - 0,05 5 mmol | | |
| Reaksi | 5 mmol | | 5 mmol | | $\frac{5 \text{ mmol}}{170 \text{ mL}}$ |
| Sisa | $\frac{2 \text{ mmol}}{170 \text{ mL}}$ | | | | ada sisa Asam lemah soal penyangga |

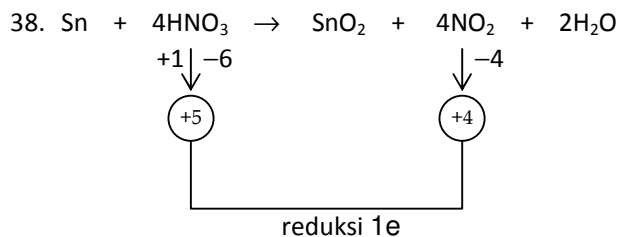
$$\begin{aligned}
 [\text{H}^+] &= K_a \cdot \frac{[\text{CH}_3\text{COOH}]}{[\text{CH}_3\text{COO}^-]} \\
 &= 10^{-5} \cdot \frac{[2/170]}{[5/170]} \\
 &= 0,4 \cdot 10^{-5} \\
 &= 4 \cdot 10^{-6} \\
 \text{pH} &= 6 - \log 4
 \end{aligned}$$

Jawab : E

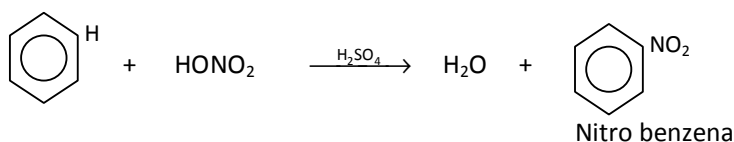
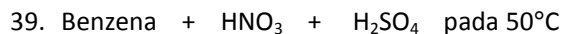
| | | |
|-----|-------------|---|
| 37. | Dari reaksi | $2 \text{ NO} + 2 \text{ H}_2 \rightarrow \text{N}_2 + 2 \text{ H}_2\text{O}$ |
| | NO | H ₂ |
| | 0,1 | 0,1 |
| | 0,1 | 0,2 |
| | 0,2 | 0,2 |
| | 2^x | 2^y |
| | | t |
| | | V |
| | | $1,23 \times 10^{-3}$ |
| | | $2,46 \times 10^{-3}$ |
| | | $4,92 \times 10^{-3}$ |
| | | 2 |

Mis $V = k (\text{NO})^x (\text{H}_2)^y$
 Orde terhadap $(\text{NO})^x \rightarrow$ lihat (H_2) yang sama $\Rightarrow 2^x = 2 \rightarrow x = 1$
 Orde terhadap $(\text{H}_2)^y \rightarrow$ lihat (NO) yang sama $\Rightarrow 2^y = 2 \rightarrow y = 1$
 $V = k \cdot (\text{NO}) (\text{H}_2)$
 Orde total $1 + 1 = 2$

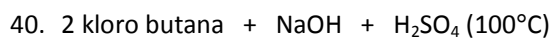
Jawab : C



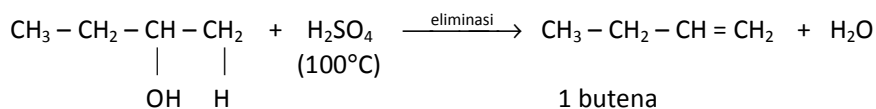
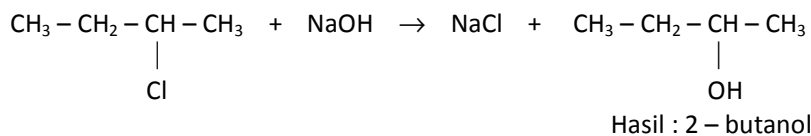
Jawab : E



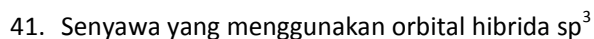
Jawab : A



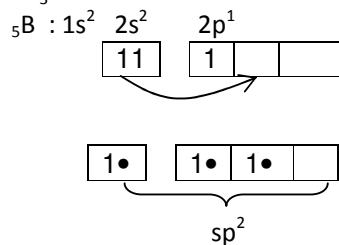
Hasil akhir yang diperoleh :



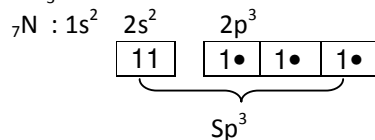
Jawab : C

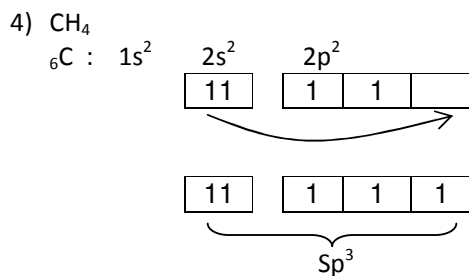
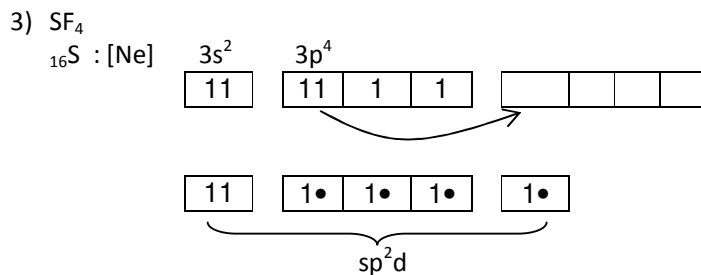


1) BF_3



2) NH_3





Jawab : C

42. 25 ml CH_3COOH 0,1 M

+

25 ml NaOH 0,1 M

($K_a = 10^{-5}$)

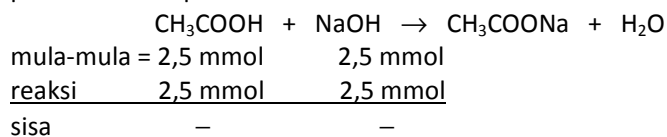
- 1) pH sebelum titrasi
 25 ml CH_3COOH 0,1 M
 (vol 25 ml diabaikan)

$$(\text{H}^+) = \sqrt{K_a \cdot \text{Na}}$$

$$= \sqrt{10^{-5} \cdot 10^{-1}}$$

$$\text{pH} = 3$$

- 2) pH setelah campuran



$2,5 \text{ mmol} / 50 \text{ ml} = 5 \cdot 10^{-2} \text{ M}$
 (HIDROLISIS BASA)

$$[\text{OH}^-] = \sqrt{\frac{K_w}{K_a} (\text{CH}_3\text{COO}^-)}$$

$$= \sqrt{\frac{10^{-14}}{10^{-5}} \cdot 5 \cdot 10^{-2}}$$

$$= \sqrt{50 \cdot 10^{-12}}$$

$$= 7,08 \cdot 10^{-6}$$

$$\text{pOH} = 6 - \log 7, \dots$$

$$\text{pH} = 8 + \log 7$$

3) Benar, sudah jelas

4) $[\text{Na}^+] = 0,05 \text{ M}$

Jawab : E

43. Dik : 1) $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$ $\Delta H = -394 \text{ kJ}$
 2) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$ $\Delta H = -572 \text{ kJ}$
 3) $2\text{CO} + \text{O}_2 \rightarrow 2\text{CO}_2$ $\Delta H = -567 \text{ kJ}$

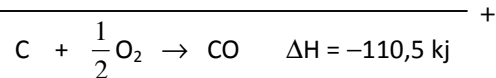
Pernyataan yang benar :

- 1) Benar, karena $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$ $\Delta H = -394 \text{ kJ}$
 $\text{CO} + \text{O}_2 \rightarrow \text{CO}_2$ $\Delta H = -283,5 \text{ kJ}$

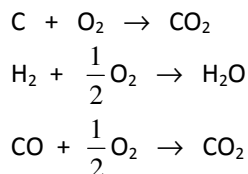
- 2) Salah, karena $\text{CO} + \text{O}_2 \rightarrow \text{CO}_2$ $\Delta H = -283,5 \text{ kJ}$
 $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$ $\Delta H = -236 \text{ kJ}$

3) Benar

| | |
|-----------|--------------------------------|
| Salin | $\Delta H = -394 \text{ kJ}$ |
| Balik : 2 | $\Delta H = +283,5 \text{ kJ}$ |

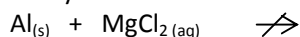


4) Salah, karena vol gas oksigen diperlukan berbeda-beda.



Jawab : B

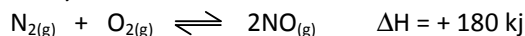
44. Pernyataan : salah



Alasan : Benar

Jawab : D

45. Pernyataan : Benar



Jika suhu dinaikkan (lebih tinggi), maka kesetimbangan bergeser ke kanan sehingga $[\text{NO}]$ makin besar.

Alasan : Benar

Jawab : A