

PEMBAHASAN
SELEKSI NASIONAL MASUK PERGURUAN TINGGI NEGERI (SNMPTN)

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46. **Jawab : E**

^{31}X , neutron = 16, maka jumlah proton = $31 - 16 = 15$
 jumlah proton = nomor atom = jumlah elektron = 15 e
 Konfigurasi elektron : $1s^2 2s^2 2p^6 3s^2 3p^3$: periode 3, golongan VA (golongan nitrogen)

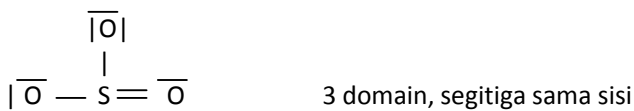
47. **Jawab : D**

Pasangan senyawa yang memiliki geometri yang mirip :

(D) SO_3 dan NO_3^- :

SO_3 : $_{16}\text{S} = 2, 8, 6 \rightarrow$ elektron valensi = $1 \times 6 = 6e$

$_{8}\text{O} = 2, 6 \rightarrow$ elektron valensi = $3 \times 6 = 18e +$
 $= 24e = 12$ pasang elektron

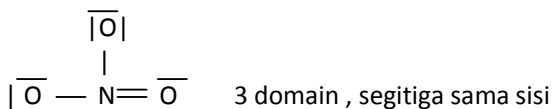


NO_3^- : $_{7}\text{N} = 2, 5 \rightarrow$ elektron valensi = $1 \times 5 = 5e$

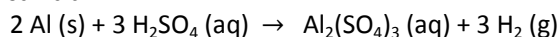
$_{8}\text{O} = 2, 6 \rightarrow$ elektron valensi = $3 \times 6 = 18e$

Elektron dari muatan = $1e +$

$= 24e = 12$ pasang elektron



48. **Jawab : A**



Cuplikan 17,1 gram

54 gram $\text{mol} = \frac{17,1}{342}$

0,1 mol ~ $= 0,05 \text{ mol}$

Massa = $0,1 \times 27 = 2,7 \text{ g}$

Prosentase Al dalam cuplikan = $\frac{2,7}{54} \times 100 \% = 5 \%$

49. **Jawab : A**

Berat tabung reaksi 25,08 g .

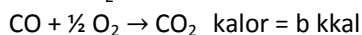
Berat tabung reaksi ditambah padatan $\text{CaCO}_3 = 30,08 \text{ gram}$.

Jadi berat padatan $\text{CaCO}_3 = 5 \text{ gram} = \frac{5}{100} \text{ mol} = 0,05 \text{ mol}$.

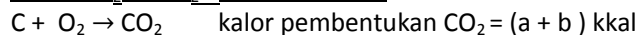
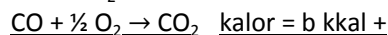


0,05 mol ~ **0,05 mol**

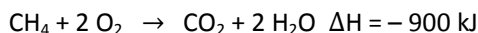
50. **Jawab : A**



Kalor pembentukan CO_2 adalah . . .

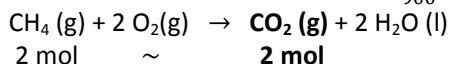


51. **Jawab : C**



Pembakaran 1 mol CH_4 dibebaskan kalor 900 kJ

$$Q = 1,8 \times 10^6 \text{ J} = 1800 \text{ kJ} \rightarrow \text{mol } CH_4 = \frac{1800}{900} = 2 \text{ mol}$$



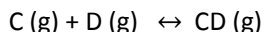
52. **Jawab : A**

$$R = k [A]^2 [B]^2$$

[A] dirubah $\frac{1}{2}$ kali sehingga laju reaksi menjadi 4 kali semula, maka [B] . . .

$$4 = k \left[\frac{1}{2}\right]^2 [B]^2 \rightarrow [B]^2 = 16, [B] = \text{dinaikkan menjadi 4 kali semula}$$

53. **Jawab : D**



$$K_p = K_c (RT)^{\Delta n = 1 - 2 = -1}$$

$$K_p = K_c (RT)^{-1}$$

54. **Jawab : B**

β karoten dapat diekstraksi dengan etanol. etanol dapat diuapkan kembali pada temperatur rendah dengan cara mengurangi tekanan udara di atasnya.

55. **Jawab : D**

$$[OH^-] = K_b \times \frac{[NH_4OH]}{[NH_4^+]}$$

$$= 10^{-5} \times \frac{0,1/1}{0,05/1} = 2 \times 10^{-5} \text{ M}$$

$$pOH = 5 - \log 2$$

$$pH = 9 + \log 2$$

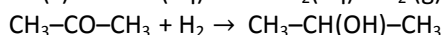
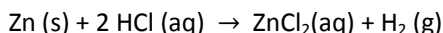
56. **Jawab : C**

Senyawa dengan rumus molekul sama, makin banyak cabang makin rendah titik didihnya.

n-heksana dan 2-metilpentana adalah senyawa nonpolar

Pernyataan benar, alasan salah.

57. **Jawab : C**

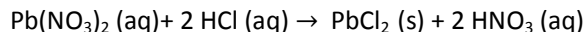


2-propanol / isopropanol

Reaksi dengan H_2 adalah reaksi reduksi

Pernyataan benar, alasan salah.

58. Jawab : D



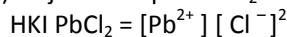
500mL 0,2 M 500mL 0,2M

(1) terjadi reaksi hidrolisis : **salah**, hidrolisis garam adalah reaksi garam dengan air

(2) pH larutan = 7 : **salah**, harusnya pH < 7, bersifat asam

(3) terbentuk gas Cl_2 : **salah**

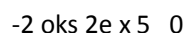
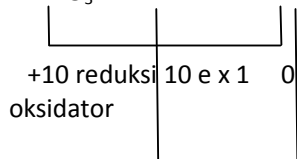
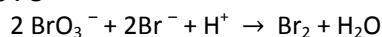
(4) terjadi endapan PbCl_2 : **benar**



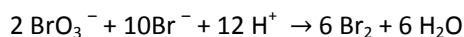
$$\begin{array}{ccc} \downarrow & & \downarrow \\ \frac{500 \times 0,2}{1000} & \times & \left(\frac{500 \times 0,2}{1000} \right)^2 = 10^{-3} \end{array}$$

$[\text{Pb}^{2+}] [\text{Cl}^-]^2 > K_{sp} \text{PbCl}_2$, jadi PbCl_2 mengendap

59. Jawab : C

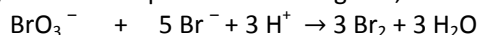


Reduktor



(1) BrO_3^- bertindak sebagai reduktor : **salah**, harusnya oksidator

(2) 2 mol Br^- tepat bereaksi dengan 0,4 mol BrO_3^- : **benar**



0,4 mol ~ 2 mol

(3) Br^- bertindak sebagai oksidator : **salah**, harusnya reduktor

(4) untuk menghasilkan 48 gram Br_2 diperlukan 40 gram ion Br^- : **benar**



48 g

$$\frac{5}{3} \times 0,3 \quad \sim \quad \text{mol} = \frac{48}{160} = 0,3 \text{ mol } \text{Br}_2$$

$$= 0,5 \text{ mol } \text{Br}^-$$

$$= 0,5 \times 80 \text{ g} = 40 \text{ g } \text{Br}^-$$

60. Jawab : B

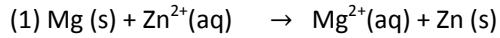
$$E^{\circ} \text{Fe}^{3+}/\text{Fe} = +0,77 \text{ volt}$$

$$E^{\circ} \text{Zn}^{2+}/\text{Zn} = -0,76 \text{ volt}$$

$$E^{\circ} \text{Cu}^{2+}/\text{Cu} = +0,34 \text{ volt}$$

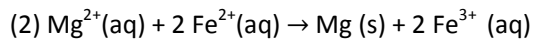
$$E^{\circ} \text{Mg}^{2+}/\text{Mg} = -2,37 \text{ volt}$$

Reaksi sel berikut yang dapat berlangsung spontan



$$E^{\circ} \text{ sel} = E^{\circ} \text{ reduksi} - E^{\circ} \text{ oksidasi}$$

$$= (-0,76) - (-2,37) = +1,61 \text{ volt} \quad (E^{\circ} \text{ sel} = +, \text{ berlangsung spontan})$$



$$E^{\circ} \text{ sel} = (-2,37) - (+0,77) = -3,14 \text{ volt} \quad (E^{\circ} \text{ sel} = -, \text{ tidak berlangsung})$$



$$E^{\circ} \text{ sel} = (+0,34) - (-0,76) = +1,10 \text{ volt} \quad (E^{\circ} \text{ sel} = +, \text{ berlangsung spontan})$$



$$E^{\circ} \text{ sel} = (-2,37) - (+0,34) = -2,71 \text{ volt} \quad (E^{\circ} \text{ sel} = -, \text{ tidak berlangsung})$$