

## KUNCI JAWABAN SOAL TES KPS SIKLUS I

1. a. Dik : Massa  $H_2SO_4$  = 9,8 gram  
 Volume larutan = 1000 mL  
 Mm  $H_2SO_4$  = 98 gr/mol

Ditanya : M  $H_2SO_4$  = ....?

$$\begin{aligned} \text{Jawab : mol } H_2SO_4 &= \frac{\text{massa } H_2SO_4}{MmH_2SO_4} \\ &= \frac{9,8 \text{ gram}}{98 \text{ gr/mol}} = 0,1 \text{ mol} \end{aligned}$$

$$\begin{aligned} M H_2SO_4 &= \frac{\text{mol } H_2SO_4}{V_{H_2SO_4}} \\ &= \frac{0,1 \text{ mol}}{1 \text{ L}} = 0,1 M \end{aligned}$$

- b. Dik : Massa  $H_2SO_4$  = 100 gram  
 Volume larutan = 1000 mL  
 Mm  $H_2SO_4$  = 98 gr/mol

Ditanya: M  $H_2SO_4$  = ....?

$$\begin{aligned} \text{Jawab : mol } H_2SO_4 &= \frac{\text{massa } H_2SO_4}{MmH_2SO_4} \\ &= \frac{100 \text{ gram}}{98 \text{ gr/mol}} = 1,02 \text{ mol} \end{aligned}$$

$$M H_2SO_4 = \frac{\text{mol } H_2SO_4}{V_{H_2SO_4}} = \frac{1,02 \text{ mol}}{1 \text{ L}} = 1,02 M$$

Jadi Kemolaran adalah Jumlah mol zat terlarut dalam setiap liter larutan

$$2. \text{ Diket: } [\text{H}_2\text{SO}_4] = 5\text{M}$$

$$\text{Kadar H}_2\text{SO}_4 = 98 \%$$

$$\rho = 1,8\text{kg/L}$$

$$\text{Volume H}_2\text{SO}_4 = 250 \text{ ml}$$

$$\text{Mm H}_2\text{SO}_4 = 98 \text{ gr/mol}$$

Ditanya: langkah-langkah membuat larutan  $\text{H}_2\text{SO}_4$  = .....?

Jawab :

- ❖ Bila diketahui  $\text{H}_2\text{SO}_4$  berkadar 98% dengan massa jenis = 1,8 kg/L.

$$\begin{aligned} \text{Maka, massa H}_2\text{SO}_4 \text{ terlarut} &= \text{kadar} \times \text{massa H}_2\text{SO}_4 \text{ dalam setiap 1L} \\ &= 98 \% \times 1,8 \text{ kg} \\ &= 1,764 \text{ kg} \\ &= 1764 \text{ g} \end{aligned}$$

$$\text{Mol H}_2\text{SO}_4 = \frac{\text{massa H}_2\text{SO}_4}{\text{Mm}} = \frac{1764 \text{ g}}{98 \text{ g/mol}} = 18 \text{ mol}$$

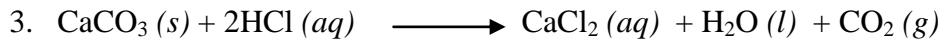
- ❖ Untuk membuat 250 mL larutan  $\text{H}_2\text{SO}_4$  5 M dari larutan  $\text{H}_2\text{SO}_4$ , maka dilakukan pengenceran terhadap larutan  $\text{H}_2\text{SO}_4$ . Jika volume yang diinginkan =  $V_2$  dengan kemolaran  $M_2$ , maka volume  $\text{H}_2\text{SO}_4$  ( $V_1$ ) dengan kemolaran 18 mol yang harus diambil adalah .....mL.

$$V_1 \times M_1 = V_2 \times M_2$$

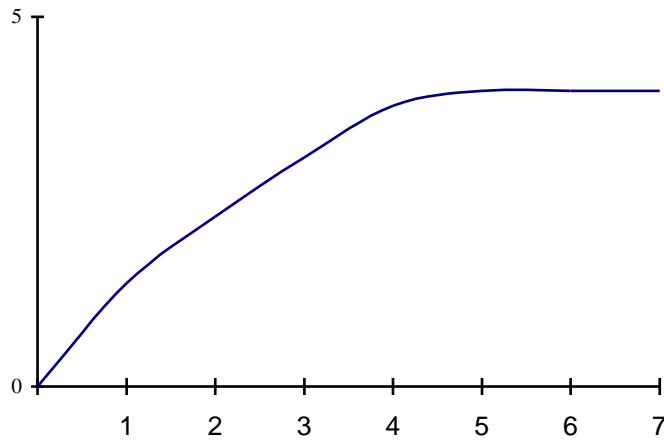
$$V_1 \times 5 \text{ M} = 250 \text{ mL} \times 18 \text{ M}$$

$$V_1 = \frac{4500}{5} = 900 \text{ ml}$$

Jadi volume larutan yang diperlukan untuk membuat larutan 5 M  $\text{H}_2\text{SO}_4$  adalah 900 ml



a. Grafik



$$\begin{aligned} b. \quad v_1 &= \frac{(v_1 - v_0)}{t_1 - t_0} \\ &= \frac{(14 - 0)}{1 - 0} = 14 \text{ mL/menit} \end{aligned}$$

$$\begin{aligned} c. \quad v &= \frac{(v_{10} - v_0)}{t_{10} - t_0} \\ &= \frac{(4 - 0)}{(5 - 0)} = 0,8 \text{ M/menit} \end{aligned}$$

$$\begin{aligned} v_3 &= \frac{(v_3 - v_0)}{t_3 - t_0} \\ &= \frac{(31 - 0)}{3 - 0} = 10,33 \text{ mL/menit} \end{aligned}$$

d. Laju reaksi rata-rata adalah laju rata-rata pada selang waktu tertentu