

Tugas Suhu dan Kalor

$$T_c = 60^\circ \text{C}$$

1. Diket: titik beku $Z = -10^\circ$
titik didih $Z = 110^\circ$

Dit: $60^\circ \text{C} = \dots^\circ \text{Z}$

Peny:

$$\frac{T_d C - T_c C}{T_d C - T_b C} = \frac{T_d Z - T_c Z}{T_d Z - T_b Z}$$

$$\frac{100 - 60}{100 - 0} = \frac{110 - T Z}{110 - (-10)}$$

$$\frac{40}{100} = \frac{110 - T Z}{120}$$

$$\frac{40}{100} \times 120 = 110 - T Z$$

$$4.800 = 11.000 - 100 T Z$$

$$100 T Z = 11.000 - 4.800$$

$$100 T Z = 6.200$$

$$\frac{100 T Z}{100} = \frac{6.200}{100}$$

$$T Z = 62^\circ \text{Z}$$

$$\boxed{T Z = 62^\circ \text{Z}}$$

2. Diket: $m_1 = 75 \text{ gram}$ $T_1 = 0^\circ \text{C}$

$m_2 = 50 \text{ gram}$ $T_2 = 100^\circ \text{C}$

Ditanya: Takhir campuran = ... ?

Peny:

$Q \text{ lepas} = Q \text{ terima}$

$$m_2 \cdot c_{\text{air}} \cdot \Delta T_2 = m_1 \cdot c_{\text{air}} \cdot \Delta T_1$$

$$50 \cdot (100 - T_{\text{ac}}) = 75 \cdot (T_{\text{ac}} - 0)$$

$$5.000 - 50 T_{\text{ac}} = 75 T_{\text{ac}} - 0$$

$$5.000 = 75 T_{\text{ac}} + 50 T_{\text{ac}}$$

2. $5.000 = 125 T_{ac}$
 $\frac{125 T_{ac}}{125} = \frac{5.000}{125}$
 $T_{ac} = 40^{\circ}C$

3. Diket: $\alpha = 1,8 \times 10^{-6} C^{-1}$
 $A_0 = p_0 \times l_0 = (200 \times 100) = 20.000 \text{ cm}^2$
 $\Delta T = 80 - 0 = 80^{\circ}C$

Dit: $\Delta A = \dots ?$

Peny:

$$\Delta A = A_0 \times \beta \times \Delta T$$
$$\Delta A = A_0 \times 2\alpha \times \Delta T$$
$$\Delta A = 20.000 \times 2(1,8 \times 10^{-6}) \times 80$$
$$\Delta A = 20.000 \times 3,6 \times 10^{-6} \times 80$$
$$\Delta A = 5,76 \text{ cm}^2$$
$$\Delta A = 57,6 \times 10^{-5} \text{ m}^2$$

4. Diket: $V_0 = V$ T_0
 P_0

Dit: Jika $P_1 = 2P_0$ dan $T_1 = 4T_0$, $V_1 = \dots ?$

Peny:

$$PV = nRT$$
$$\frac{P_0 V_0}{T_0} = \frac{P_1 V_1}{T_1}$$
$$\frac{P_0 V_0}{T_0} = \frac{2P_0 V_1}{4T_0}$$
$$V_0 = \frac{2V_1}{4}$$
$$4V_0 = 2V_1$$
$$\frac{2V_1}{2} = \frac{4V_0}{2}$$
$$V_1 = 2V_0$$



5.

$$\text{Diket: } T_A = 210^\circ\text{C}$$

$$T_B = 30^\circ\text{C}$$

$$k_A = 2k_B$$

$$\text{Dit: } T = \dots?$$

Peny:

$$H_A = H_B$$

$$k_A \Delta T_A = k_B \Delta T_B$$

$$2k_B (210 - T) = k_B (T - 30)$$

$$420 - 2T = T - 30$$

$$420 + 30 = T + 2T$$

$$450 = 3T$$

$$\frac{3T}{3} = \frac{450}{3}$$

$$T = 150^\circ\text{C}$$