

1	10
2	10
3	10
4	10
5	
Итого	40
Подпись	<i>[Signature]</i>

Задача 1  
Решение

8/1

$$\rho_0 = 1 \frac{\text{г}}{\text{см}^3}$$

$$\rho_x = ?$$

$$V_0 = \frac{m_0}{\rho_0}$$

$$V_0 = \frac{3200}{1} = 3200 \text{ см}^3$$

$$\Delta V_{\text{ж}} = \Delta h \cdot S$$

$$\Delta V_{\text{ж}} = 1,4 \cdot 120 = 168 \text{ см}^3$$

$$V_{\text{ж}} + V_{\text{жог}} = V_{\text{ж}} + V_0 + \Delta V_{\text{ж}}$$

$$V_{\text{жог}} = V_0 + \Delta V_{\text{ж}}$$

$$V_{\text{жог}} = 3200 + 168 = 3368 \text{ см}^3$$

$$F_A = P, \text{ где } P - \text{вес}$$

$$\rho_x \cdot g \cdot V_{\text{жог}} = m \cdot g$$

$$\rho_x \cdot 10 \cdot 3368 = 3200 \cdot 10$$

$$\rho_x = \frac{32000}{33680} \approx 0,95 \frac{\text{г}}{\text{см}^3}$$

Ответ:  $\rho_x = 0,95 \frac{\text{г}}{\text{см}^3}$

105

Задача 2  
Решение

Дано:

$$V_k = V_{\text{ж}}$$

$$V_k = \frac{1}{3} h S$$

$$V_{\text{ж}} = \frac{4}{3} \pi R^3$$

$$S_k = \pi R^2$$

$$V_k = V_{\text{ж}}$$

$$\frac{1}{3} h S = \frac{4}{3} \pi R^3$$

$$S_k = \frac{4 \pi R^3}{h}$$

$$P = \frac{F}{S}$$

$$F = P \cdot S$$

$$\frac{F_k}{F_{\text{ж}}} = \frac{P_k \cdot S_k}{P_{\text{ж}} \cdot S_{\text{ж}}}$$

$$P = \rho g h$$

$$\frac{F_k}{F_{\text{ж}}} = \frac{\rho g h S_1}{\rho g R^2 S_2} = \frac{h \cdot \frac{4 \pi R^3}{h}}{R^2 \pi R^2} = \frac{4 \pi R^3}{h \pi R^2} = 2$$

$$\left| \frac{F_k}{F_{\text{ж}}} \right| = 2$$

Ответ:  $\left| \frac{F_k}{F_{\text{ж}}} \right| = 2$

105

Zagara 3  
Pemeriksaan

8/1

Dikno:  
 $t_0 = 470^\circ\text{C}$   
 $t_1 = 18^\circ\text{C}$   
 $V = 2,6 \text{ m}^3$   
 $m_1 = 160 \text{ g}$   
 $t_2 = 175^\circ\text{C}$   
 $t_3 = 25^\circ\text{C}$   
 $c_1 = 130^\circ\text{C}^{-1}\text{K}$   
 $m_0 = ?$

$$Q_1 + Q_2 + Q_3 = 0$$

$$Q_1 = c_1 m_0 \Delta t_1$$

$$Q_2 = c_1 (m_0 - 0,16) \cdot \Delta t_2$$

$$Q_3 = c_p V \cdot \Delta t_3$$

$$c_1 m_0 \Delta t_1 + c_1 (m_0 - 0,16) \cdot \Delta t_2 + c_p V \cdot \Delta t_3 = 0$$
~~$$c_1 m_0 \Delta t_1 + c_1 (m_0 - 0,16) \cdot \Delta t_2 + c_p V \cdot \Delta t_3 = 0$$~~

$$c_1 m_0 \Delta t_1 + c_1 m_0 \Delta t_2 - 0,16 c_1 \Delta t_2 + c_p V \Delta t_3 = 0$$

$$c_1 m_0 \Delta t_1 + c_1 m_0 \Delta t_2 = 0,16 c_1 \Delta t_2 - c_p V \Delta t_3$$

$$m_0 (c_1 \Delta t_1 + c_1 \Delta t_2) = 0,16 c_1 \Delta t_2 - c_p V \Delta t_3$$

$$m_0 = \frac{0,16 c_1 \Delta t_2 - c_p V \Delta t_3}{c_1 \Delta t_1 + c_1 \Delta t_2}$$

$$m_0 = \frac{0,16 \cdot 130 \cdot (-695) - 4200 \cdot 2,6 \cdot 7}{130 \cdot (-695) + 130 \cdot (-50)} = \frac{-77480}{-96850} = 0,8 \text{ kg}$$

105

Jawab:  $m_0 = 0,8 \text{ kg}$

Zagara 4  
Pemeriksaan

Dikno:  
 $m_u = 1,34 \text{ kg}$   
 $t_k = 0^\circ\text{C}$   
 $t_p = 100^\circ\text{C}$   
 $K = 2,5$   
 $\lambda = 3,3 \cdot 10^5$   
 $L = 2,26 \frac{\text{kJ}}{\text{kg}}$   
 $c_2 = 4,2 \frac{\text{kJ}}{\text{kg}^\circ\text{C}}$   
 $m_{\text{uap}} = ?$

$$m_{u.k.} = \frac{m_u}{2,5}$$

$$m_{u.k.} = \frac{1,34}{2,5} = 0,536 \text{ kg}$$

$$m_u - m_{u.k.} = \Delta m$$
~~$$m_u - m_{u.k.} = \Delta m$$~~

$$\Delta m = 1,34 - 0,536 = 0,804 \text{ kg}$$

$$-L m_{\text{uap}} + c m_{\text{uap}} (t_p - t_k) + \dot{Q}_{\text{kon}} = 0$$

$$m_{\text{uap}} (-L + c (t_p - t_k)) = -\dot{Q}_{\text{kon}}$$

$$m_{\text{uap}} = \frac{-\dot{Q}_{\text{kon}}}{-L + c t_p - c t_k}$$

$$m_{\text{uap}} = \frac{-3,3 \cdot 10^5 \cdot 0,804}{-2,26 \cdot 10^6 + 4200 \cdot 100} = 0,099 \text{ kg} = 99 \text{ g}$$

105.

Jawab:  $m_{\text{uap}} = 99 \text{ g}$