

№3 Б: $R = 200 \Omega$

$\eta = 80\%$

$U = 220 \text{ В}$

$t = 25 \text{ мин}$

$t_0 = 25^\circ \text{C}$

$V = 9,6 \text{ л}$

$\rho_{\text{сг}} = 1000 \text{ кг/м}^3$

$Q_{\text{сг}} = 4200 \text{ Дж/кг} \cdot ^\circ \text{C}$

$m_{\text{сг}} = ?$

Ш: $A = IUt = \frac{U^2}{R} \cdot t$

$A_T = \frac{220 \cdot 220}{200} \cdot 25 \cdot 60 = 363.000$

$A_n = A_T \cdot \frac{\eta}{100} = 363 \cdot 10^3 \cdot \frac{80}{100} = 290.400 \text{ Дж}$

$A_n = Q_{\text{сг}}$

$Q_{\text{сг}} = cm \Delta t$

$Q_{\text{сг}} = Q_{\text{к}} - Q_{\text{сг}}$

$Q_{\text{сг}} = 4200 \cdot 10^3 \cdot 6 \cdot 10^{-4} \cdot 75 = 420 \cdot 10^3$

$= 189.000 \text{ Дж}$

$Q_{\text{сг}} = r m$

$m = \frac{Q_{\text{сг}}}{r}$

№4 Б: $h_1 = 30 \text{ см}$

$h_2 = 60 \text{ см}$

$\rho_{\text{к}} = 2400 \text{ кг/м}^3$

$\rho_{\text{м}} = 900 \text{ кг/м}^3$

$h = ?$

$p_1 + p_2 = P$

$P = \rho_{\text{м}} g (h_1 + h_2)$

$P = \rho_{\text{к}} g h$

$P = 900 \cdot 10 \cdot 90 \cdot 10^{-3} =$

$= 810 \text{ Па}$

$h = \frac{P}{\rho_{\text{к}} g} = \frac{810}{2400 \cdot 10} =$

$0,03 \text{ м} = 3 \text{ см}$

№1 Б: $R = 20 \Omega$

Ш: $R_x = ?$

Ш: тұйықтаған: $AB = R_1 = \frac{2R \cdot R}{2R + R} = \frac{2R^2}{3R} = \frac{2R}{3}$

Азғарылмаған: $AB = R_2 = 2R$

$I = \frac{U}{R_{\text{к}}} = \frac{U}{R_{\text{к}} + R_{AB}}$

$Q = I^2 R_{AB} t = \frac{U^2 R_{AB}}{(R_{\text{к}} + R_{AB})^2} \cdot t \quad Q_1 = Q_2$

$$\frac{U^2 \cdot 2R}{(R_x + R_{AB})^2} \cdot t = \frac{U^2 \cdot \frac{2R}{3}}{(R_x + R_{AB})^2} \cdot t$$

$$\frac{2R}{(R_x + 2R)^2} = \frac{\frac{2R}{3}}{(R_x + \frac{2R}{3})^2}$$

$$3(R_x + \frac{2R}{3})^2 = (R_x + 2R)^2$$

$$\sqrt{3} \cdot (R_x + \frac{2R}{3}) = R_x + 2R$$

$$\sqrt{3} R_x + \frac{2R}{3} \cdot \sqrt{3} = R_x + 2R$$

$$\sqrt{3} R_x - R_x = 2R - \frac{2R}{3} \cdot \sqrt{3}$$

$$R_x = \frac{2R - \frac{2R}{3} \cdot \sqrt{3}}{\sqrt{3} - 1} = \frac{2 \cdot 20 - \frac{2 \cdot 20}{3} \cdot \sqrt{3}}{\sqrt{3} - 1} = \frac{40 - 23,1}{0,73} = 23,2B$$

$$N2 \quad d_1 = 3,5 \mu m$$

$$d_2 = \frac{d_1}{3}$$

$$L = 1,5 \mu m$$

$$D = ?$$

$$L \cdot 1,5 = f$$

$$f = 1,5 \mu m$$

$$\alpha = \frac{3,5}{3} = \frac{3 \cdot \frac{5}{10}}{3} = \frac{3 \cdot \frac{1}{2}}{3} = \frac{7}{6}$$

$$F = \frac{\frac{4}{6} \cdot \frac{3}{2}}{\frac{7}{6} + \frac{3}{2}} \cdot \frac{\frac{7}{6}}{\frac{16}{6}} = \frac{7}{16} \mu m$$

$$D = \frac{1}{F} = \frac{16}{7} \text{ gmp}$$

III. кіші ретпен, жаспан, тура