

3-есеп

$R = 200 \text{ Ом}$

$\eta = 60\%$

$U = 220 \text{ В}$

$t = 25 \text{ мин}$

$t_0 = 20^\circ \text{C}$

$V_0 = 0,6 \text{ л}$

$\rho_c = 10^3 \text{ кг/м}^3$

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

Шешуі:

$Q_2 = \frac{U^2 t}{R} \Rightarrow \eta = \frac{Q_1}{Q_2}; Q_1 = \eta \cdot Q_2; Q_1 = (m \Delta t = c \rho (V_2 - V_0) (t_2 - t_1))$

$V_2 - V_0 = \frac{Q_1}{c \rho (t_2 - t_1)}; V_2 - V_0 = \frac{\eta \cdot \frac{U^2 t}{R}}{c \rho (t_2 - t_1)}$

$V_2 = 0,6 \cdot 10^{-3} + \frac{0,8 \cdot \frac{220^2 \cdot 25 \cdot 60}{200}}{4200 \cdot 10^3 \cdot 80} = 0,26 \text{ л.}$

Т.Ә. V_2

$\text{Жл: } V_2 = 0,26 \text{ л.}$

2-есеп.

$d_1 = 3,5 \text{ см}$

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

$L = 1,5 \text{ см}$

Т.Ә. n

Шешуі:

$L = 1,5 = f \Rightarrow f = 1,5 \text{ см}$

$d_2 = \frac{3,5}{3} = \frac{7}{6} = 1,16 \approx 1,2$

$F = \frac{\frac{7}{6} \cdot \frac{3}{2}}{\frac{7}{6} + \frac{3}{2}} = \frac{\frac{7}{4}}{\frac{16}{6}} = \frac{21}{32} \approx 0,65 \text{ см}$

$n = \frac{1}{f} = \frac{1}{1,5} = 0,65 \text{ гнтр}$

Жл: $\text{гнтр} = 1,5$, кішірейтінген, майтан, тура.**4-есеп**

$h_1 = 30 \text{ мм}$

$h_2 = 60 \text{ мм}$

$\rho_k = 2700 \text{ кг/м}^3$

$\rho_m = 900 \text{ кг/м}^3$

Т.Ә. h_3

Шешуі:

$P_1 = \rho_m g h_1 = 900 \text{ кг/м}^3 \cdot 10 \frac{\text{Н}}{\text{кг}} \cdot 30 \text{ мм} \cdot 10^{-3} = 900 \text{ кг/м}^3 \cdot 10 \frac{\text{Н}}{\text{кг}} \cdot 30 \cdot 10^{-3} \text{ м} = 270 \text{ Па.}$

$P_2 = \rho_m g h_2 = 900 \text{ кг/м}^3 \cdot 10 \frac{\text{Н}}{\text{кг}} \cdot 60 \cdot 10^{-3} \text{ м} = 540 \text{ Па}$

$P_k = P_2 - P_1 = 540 \text{ Па} - 270 \text{ Па} = 270 \text{ Па.}$

$P_k = \rho_k g h_3 \Rightarrow h_3 = \frac{P_k}{\rho_k g} = \frac{270 \text{ Па}}{2700 \text{ кг/м}^3 \cdot 10 \frac{\text{Н}}{\text{кг}}} = 10 \cdot 10^{-3} \text{ м} = 10 \text{ мм}$

$P_k = 10 \text{ мм.}$

1-есеп

Берілгені

$$R = 20 \text{ Ом}$$

$$\text{т.б. } R_x$$

Шешуі

$$AB \Rightarrow R_1 = \frac{2R \cdot R}{2R + R} = \frac{2R^2}{3R} = \frac{2R}{3} \text{ (Түйіндістан)}$$

$$AB \Rightarrow R_2 = 2R \text{ (Амператомзан)}$$

$$I = \frac{U}{R_{\Sigma}} = \frac{U}{R_x + R_{AB}} ; Q = I^2 R_{AB} t = \frac{U^2 R_{AB}}{(R_x + R_{AB})^2} \cdot t ; Q_1 = Q_2$$

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

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

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

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

$$\text{Ж: } R_x = 23,2 \text{ В.}$$