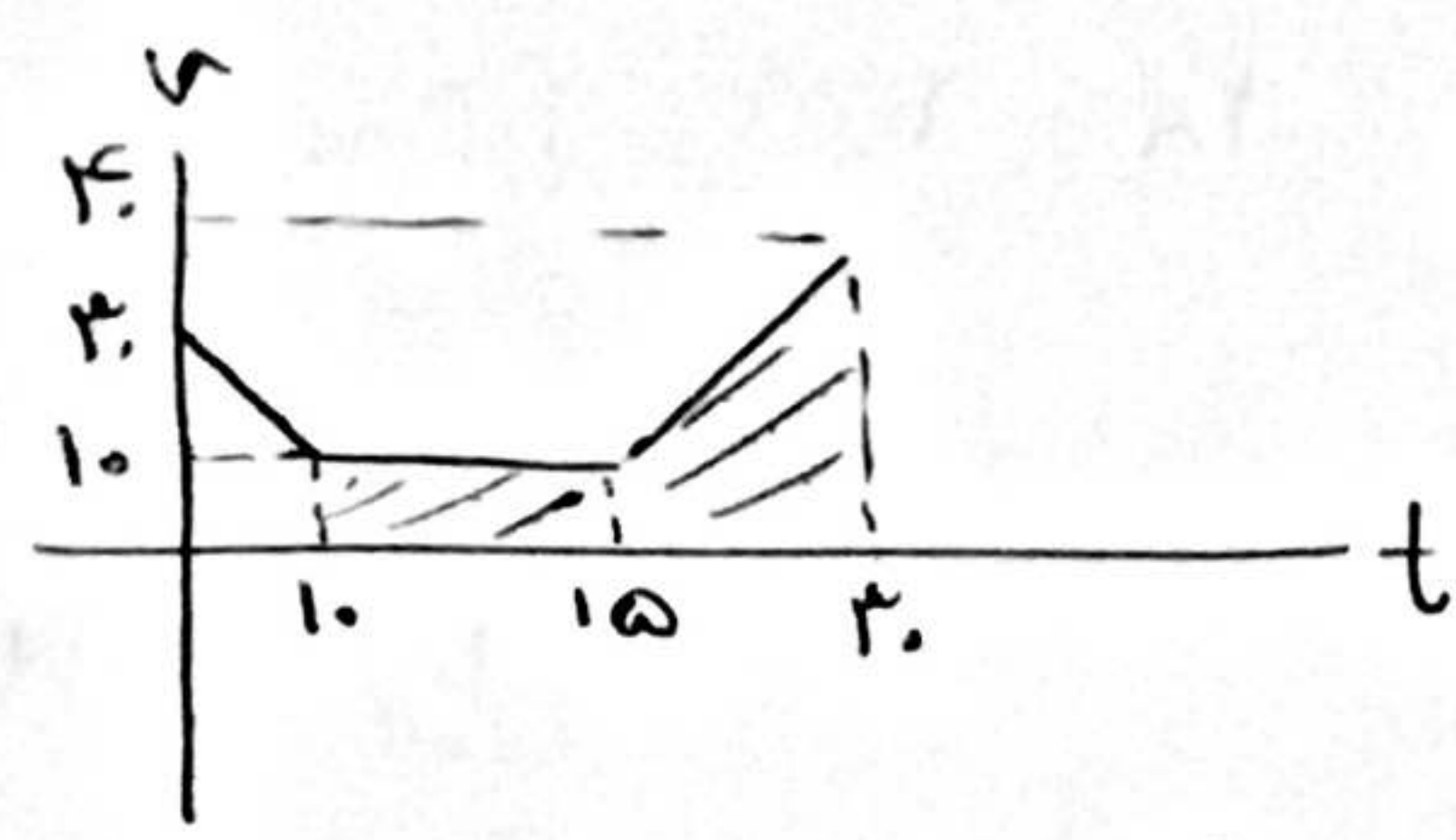


$t_1 = 2 \quad v_1 = -2$   
 $t_2 = 4 \quad v_2 = 14$

$\bar{a} = \frac{\Delta v}{\Delta t} = \frac{14}{2} = 7 \text{ m/s}$

(ف) - ۲.۶

(۳) - ۲.۷



$t = 1. \quad v_1 = at + v_0 = -2 \times 1 + 2 = 0 \text{ m/s}$

$t = 2. \rightarrow v = 2 \times 1.5 + 1 = 4 \text{ m/s}$

۳. مسافت زیر نمودار از ۰ تا ۲.  $S = \Delta x = 21, 25$

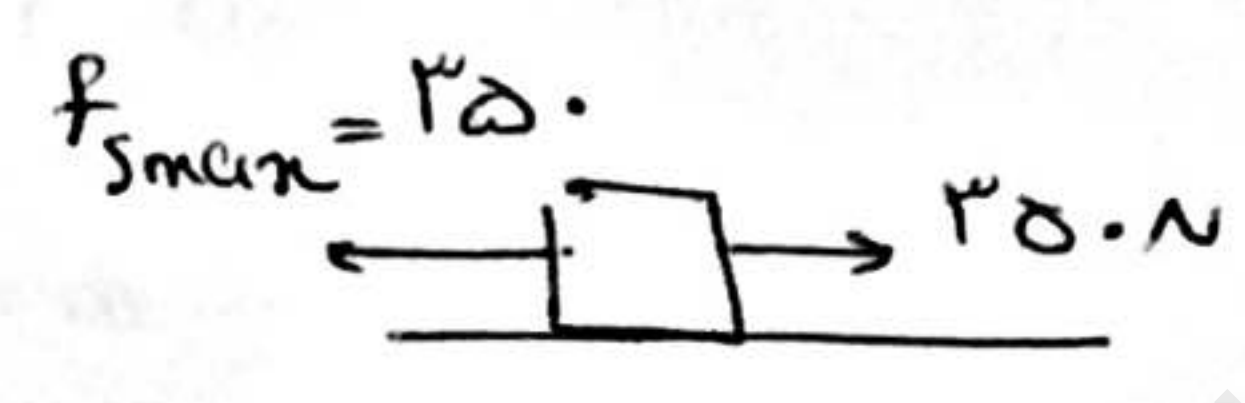
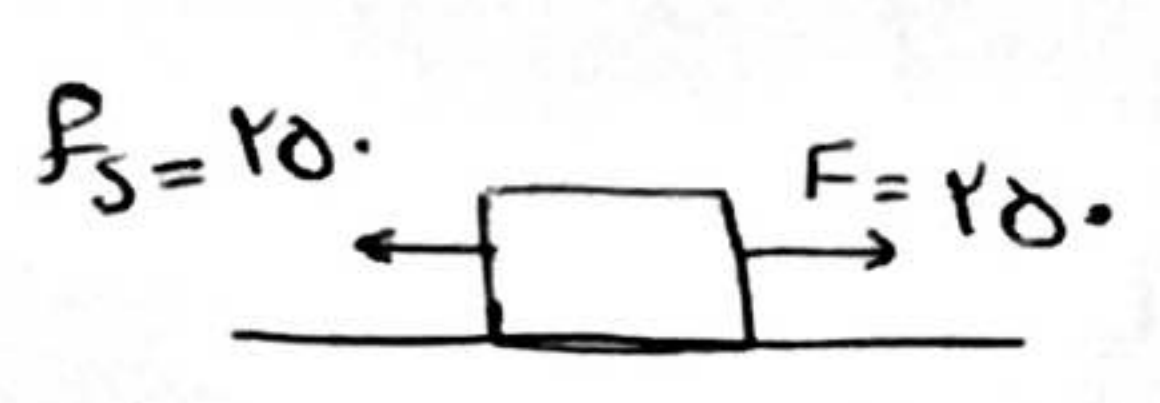
$\bar{u} = \frac{\Delta x}{\Delta t} = \frac{S}{t} = 21, 25$

$x_A = \frac{1}{2} a_A t^2 \rightarrow v_A = \frac{1}{2} \times 1, 5 t^2 \rightarrow t = 1, 5$

(۲) - ۲.۸

$x_B = \frac{1}{2} a_B t^2 - v_0 t \rightarrow a_B = 2 \text{ m/s}^2$

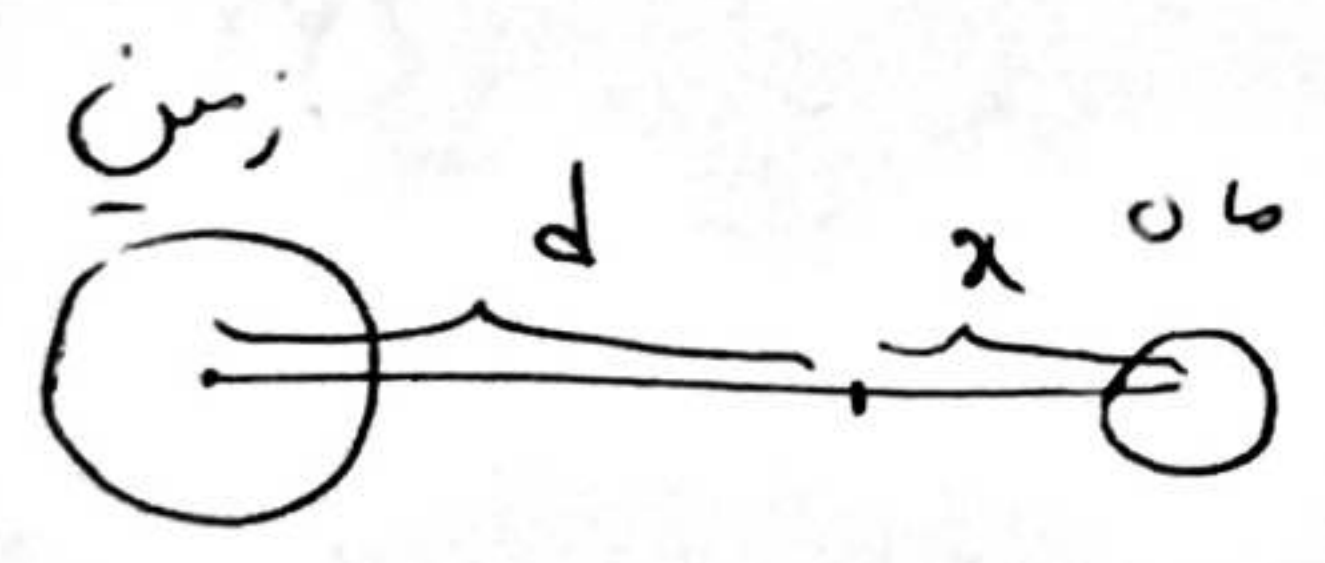
$\frac{v_B}{v_A} = \frac{a_B}{a_A} = 2$



(۱) - ۲.۹

$f_{smax} = \mu_s N = \mu_s mg \rightarrow \mu_s = \frac{25}{200} = 0, 125$

۲۱. (۳) چون جسم (۱) متراکز (۱) است پس نسبت به آن بی‌تأثیر است. سطح (۱) است در زمین پس جوابی آن بی‌تأثیر است.



$F_1 = F_2$   
 $\frac{m_e}{d^2} = \frac{m}{x^2}$

$\frac{9}{d} = \frac{1}{x} \rightarrow d = 9x$

(۱) - ۲۱۱

$\frac{\omega_2}{\omega_1} = \frac{k_2 - k_1}{k_1 - k_2} = \frac{9 \times 10^2 - 10^2}{10^2 - 9 \times 10^2} = 1$

(۳) - ۲۱۲

$\frac{k_B}{k_A} = \left(\frac{P_B}{P_A}\right)^2 \left(\frac{m_A}{m_B}\right) = 5$

(۴) - ۲۱۳

$\frac{v'}{2 \times 1.4} = \frac{0, 45}{0, 4} \rightarrow v' = 2, 25 \times 1.4$

(۲) - ۲۱۴

$f = \frac{v}{\lambda} = \frac{2 \times 1.4}{0, 4 \times 1.4} = 5 \times 1.4 \text{ Hz}$

$$\lambda = 5 \text{ cm} \rightarrow T = \frac{\lambda}{v} = \frac{5}{2} = \frac{1}{4} \text{ s}$$

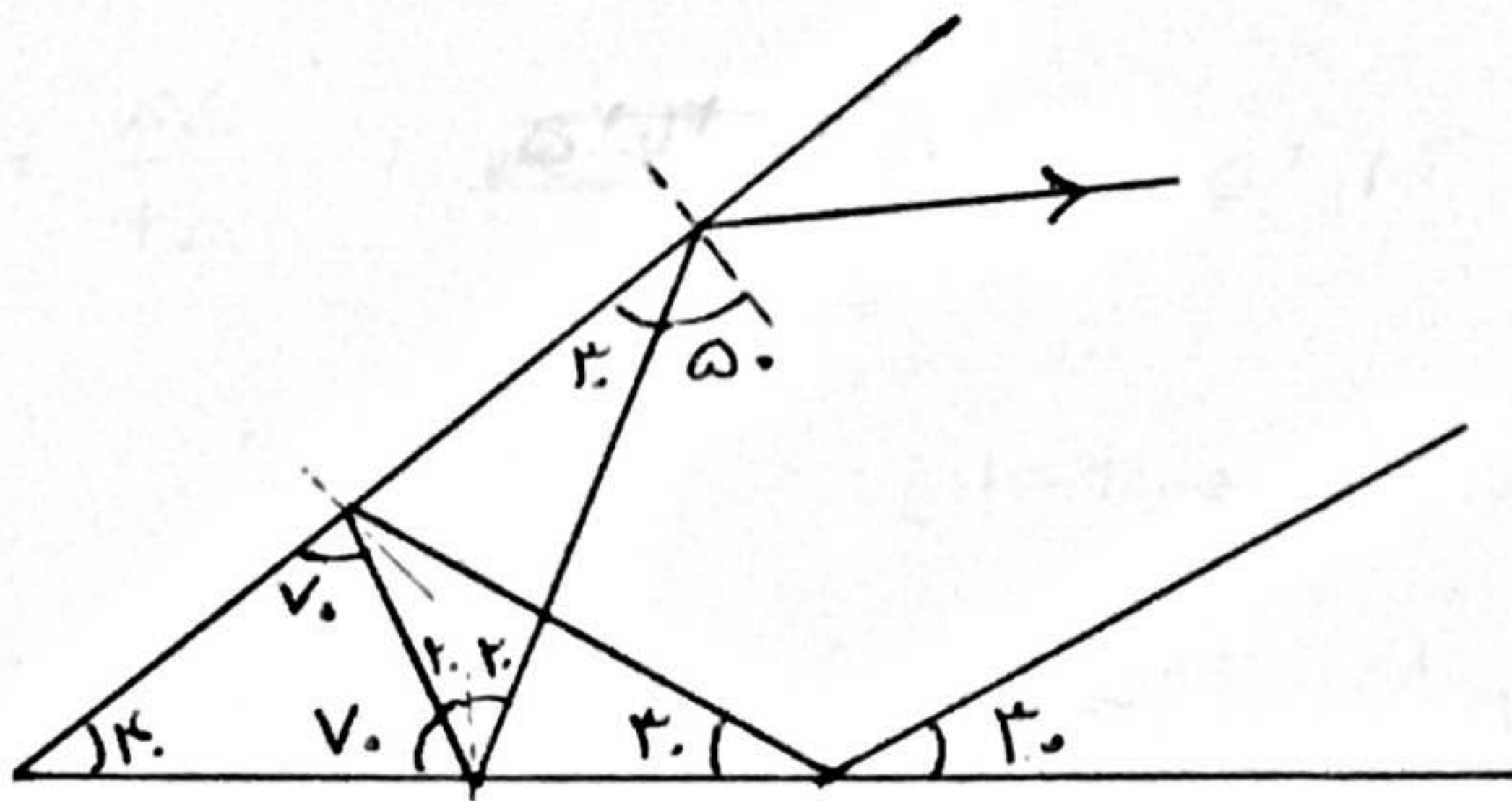
3) - 215

$$\frac{1}{\lambda} = \frac{T}{\lambda} \rightarrow$$

در مدت  $\frac{T}{2}$  هر ذره با اندازه  $2A$  خارج جابجی شود

$$2A = 2 \times 2 = 4 \text{ cm}$$

5) - 214



$$E = 2K$$

$$\frac{1}{2} m A^2 \omega^2 = 2 \left( \frac{1}{2} m v^2 \right)$$

$$T = \frac{1}{f} \rightarrow f = 1. \quad \omega = 2\pi f$$

5) - 217

$$v = \frac{\sqrt{r}}{2} A \omega = \frac{\sqrt{r}}{2} \times 5 \times 2\pi \times 1 = 5 \cdot \sqrt{2} \pi$$

$$\frac{\Delta E_{1,2}}{\Delta E_{4,8}} = \frac{\frac{1}{1} - \frac{1}{9}}{\frac{1}{14} - \frac{1}{34}} = 25,4$$

1) - 218

2) - 219

$$A \times Z \rightarrow \frac{A-n}{Z} Y + 2 \frac{F}{2} \alpha + \frac{F}{-1} \beta$$

5) - 220

$$E = \frac{kq}{r^2} \rightarrow 1,20 \times 10^{-5} = \frac{kq}{0,4^2} \quad kq = 0,4^2 \times 1,20 \times 10^{-5}$$

3) - 221

$$F = \frac{kq_1 q_2}{r^2} \rightarrow F = \frac{0,4^2 \times 1,20 \times 10^{-5} \times 9 \times 10^{-4}}{0,9^2 \times 0,9} = 1,4$$

5) - 222

$$1,20 \times 10^{-5} = 2 \cdot \mu C \rightarrow q'_1 = 1 - 2 = -1 \cdot \mu C$$

$$q'_2 = -5 + 2 = -3 \cdot \mu C$$

$$\frac{F'}{F} = \frac{q'_1 q'_2}{q_1 q_2} = \frac{1 \times 3}{1 \times 5} = \frac{3}{5} \quad \frac{\Delta F}{F} \times 100 = -55\%$$

$$u = \frac{1}{r} cu^r = \frac{1}{r} \times \Delta \times l \dots = r \Delta \cdot \mu J$$

(2) - 222

$$\mathcal{E} = 12V$$

$$V = IR \quad 9.4 = I \times 1 \rightarrow I = 9.4$$

(2) - 224

$$V = 9.4$$

$$V = \mathcal{E} - Ir \rightarrow r = \frac{9.4 - 12}{-1.2} = 2$$

(3) - 220

$$P = \frac{V^2}{R}$$

$$P_1 = \frac{V^2}{1 \Omega}$$

$$P_r = \frac{V^2}{1.2 \Omega}$$

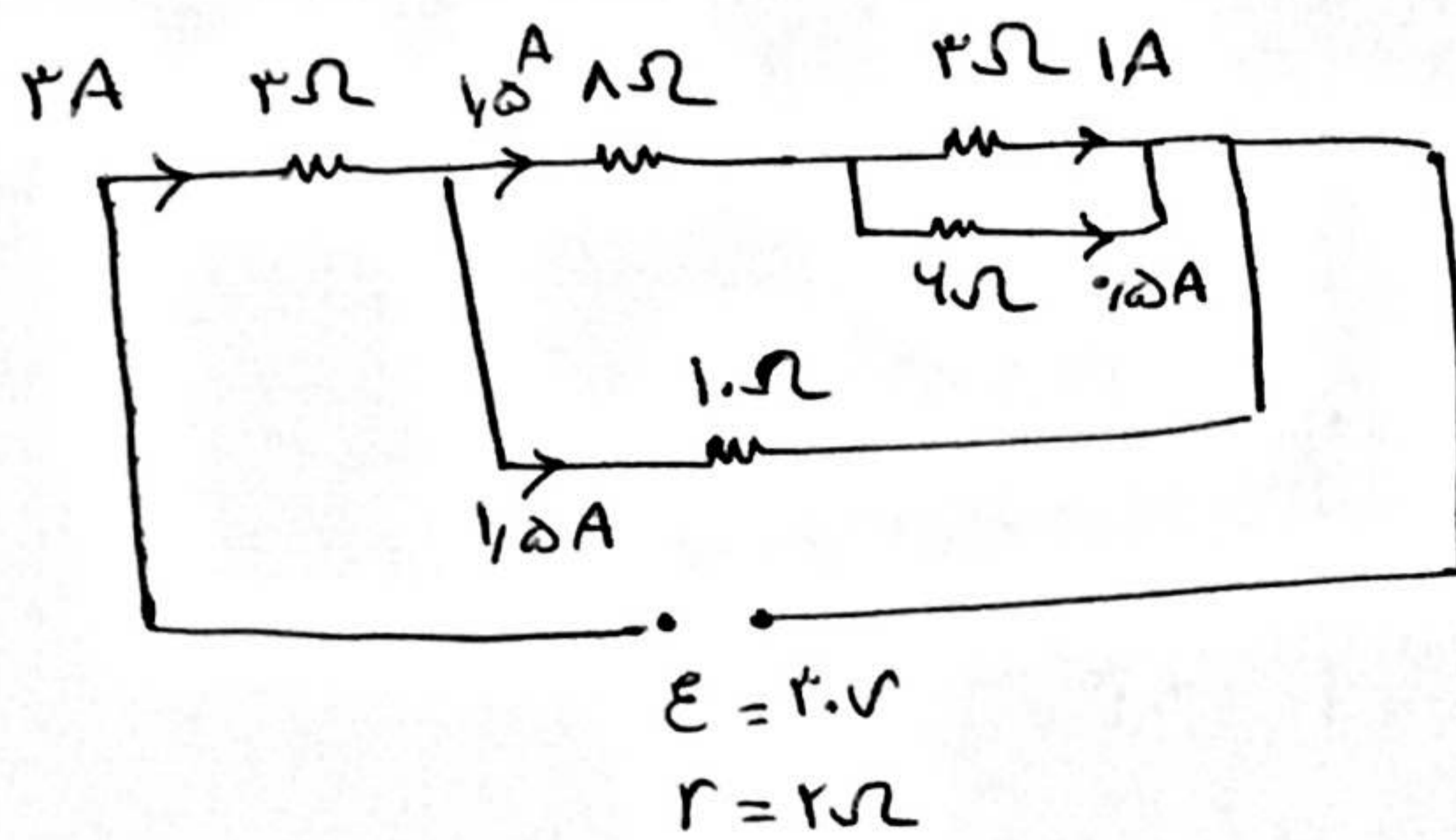
$$P_r = \frac{V^2}{R_{eq}} = \frac{V^2}{9.4}$$

$$R_{eq} = 9.4 \Omega$$

↓  
min

↓  
max

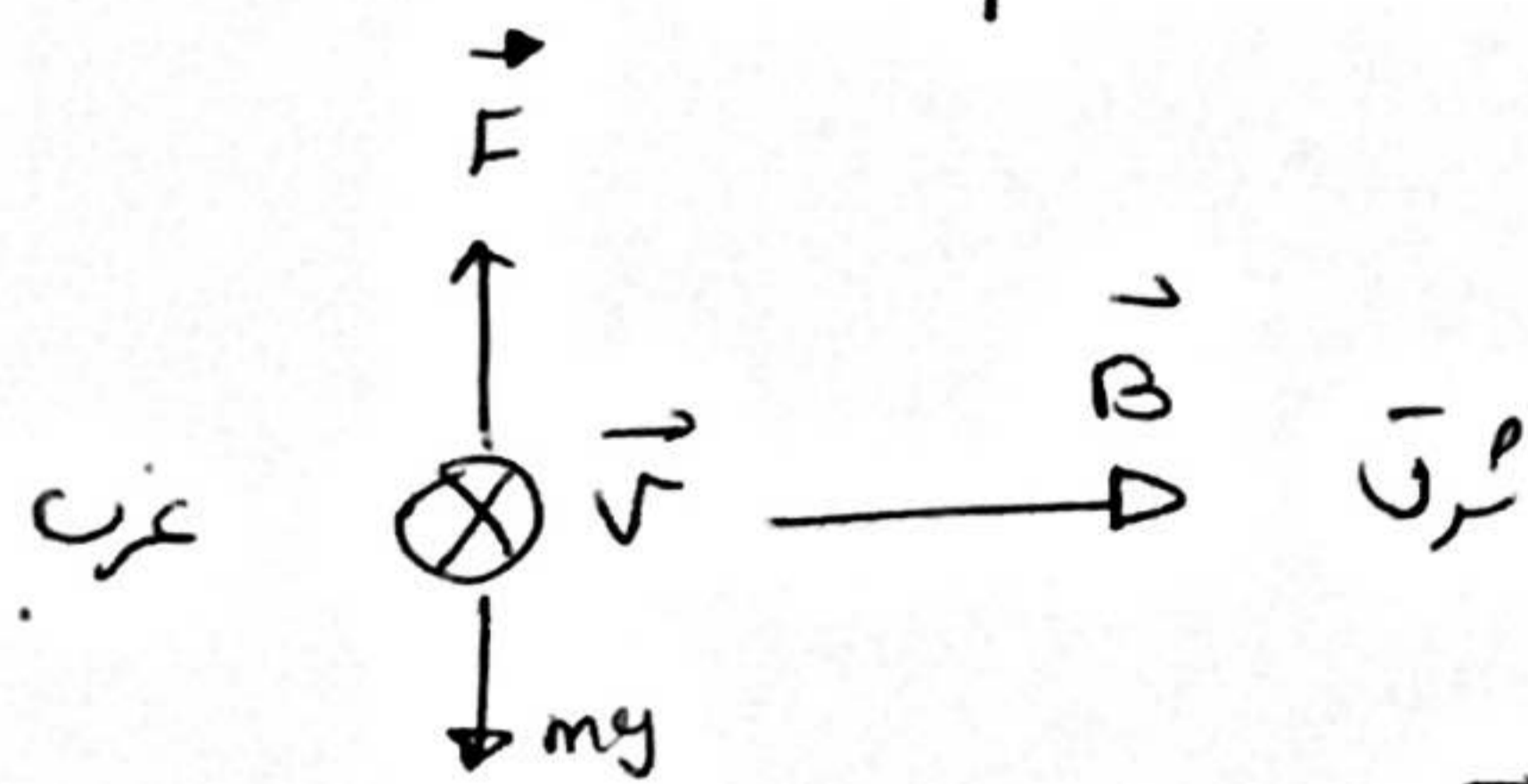
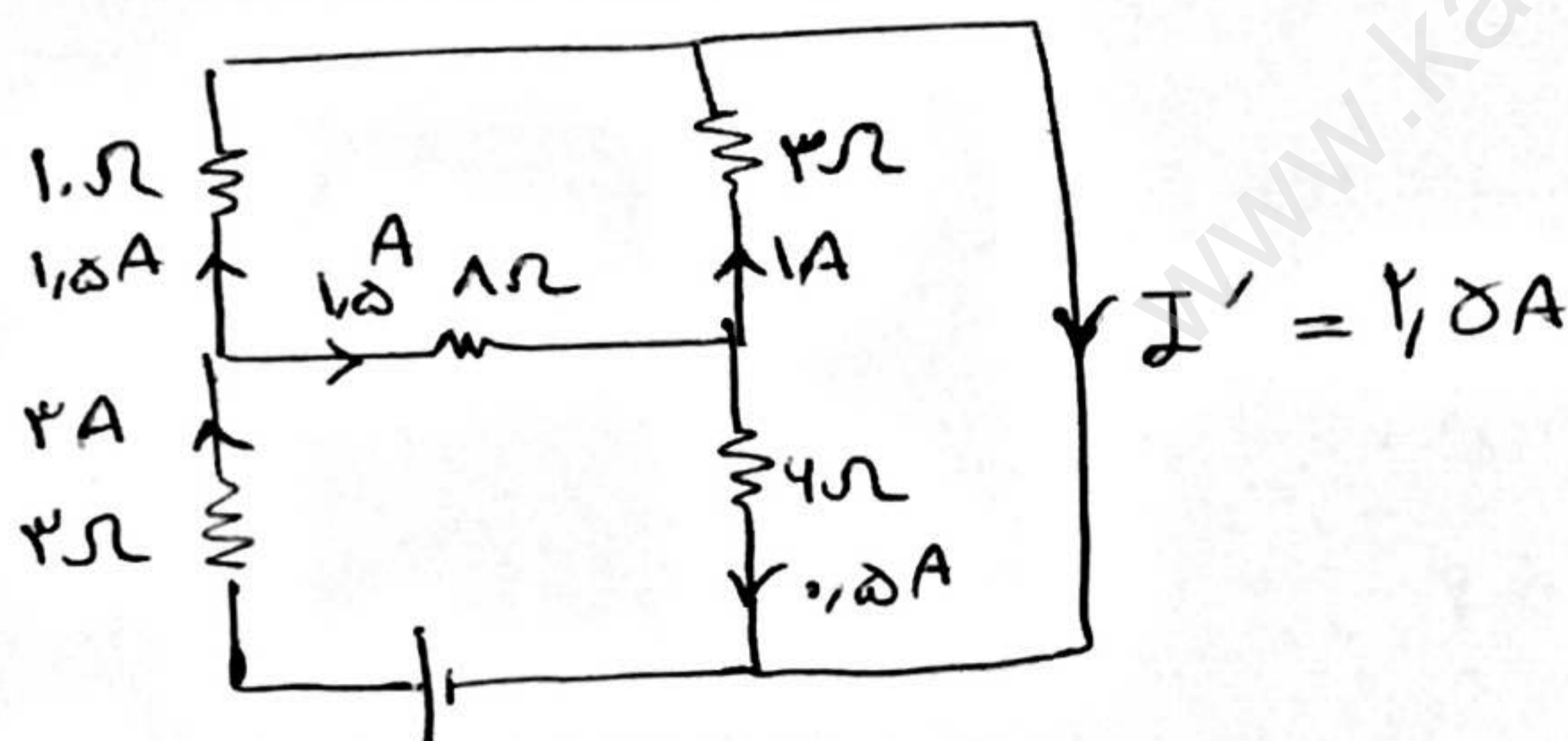
$$\frac{P_r}{P_1} = r$$



(3) - 224

$$R_{eq} = 1 \Omega$$

$$I = \frac{\mathcal{E}}{r + R_{eq}} = \frac{2}{1.2} = 1.67 A$$



$$mg = qvB \rightarrow B = \frac{\Delta \times l \cdot r \times l}{\Delta \times l \cdot r \times \frac{1}{2} \Delta \times l \cdot r}$$

(3) - 22V

$$B = 2.8 T$$

$$I l B = mg$$

(1) - 22A

$$I = \frac{mg}{lB} = \frac{14 \times 10^{-3} \times 1}{1 \times 2.8} = 5 A$$



$$P_A = P_B$$

$$\frac{\rho h}{\rho} = \rho_{Hg} (27 - 2x)$$

$$1 \times 27 = 13.6 (27 - 2x) \rightarrow x = 17.5 \text{ cm}$$

① - 229

② - 230

$$\Delta F = 1.8 \Delta \theta \rightarrow \Delta \theta = \frac{9}{1.8} = 5^\circ \text{C}$$

③ - 231

$$Q = mc\Delta\theta = 1 \times 4200 \times 5 = 21 \text{ kJ}$$

بہتر سے بہتر سے حاصل ہونے

④ - 232

⑤ - 233

$$\Delta l_{Al} + \Delta l_{Cu} = 0, \text{FCM} \quad \Delta l = l_1 \alpha \Delta \theta$$

⑥ - 234

$$5 \times \Delta \theta \left( \frac{1.8 \times 10^{-2} \times 23 \times 10^{-6}}{1.8 \times 10^{-2}} + \frac{1.8 \times 10^{-2} \times 16 \times 10^{-6}}{1.8 \times 10^{-2}} \right) = 0.16$$

$$\Delta \theta = 2.0^\circ \text{C}$$

$$0.19 \text{ mc}\Delta\theta = m' L_f$$

⑦ - 235

$$0.19 \times 4200 \times 2.0 = m' \times 336$$

$$m' = \frac{0.19 \times 4200 \times 2.0}{336} = 23.5 \text{ g}$$