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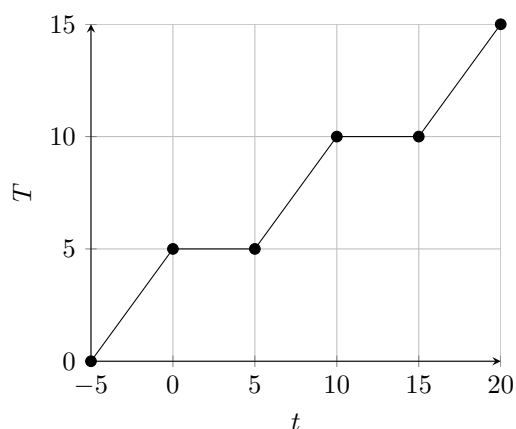
# Permbledhje: Tremujori - 2

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## 9 Fizika Termike

### 9.1 Ndryshimi i Gjendjes dhe Energjise



$] -5, 0[$	$\rightarrow$	Ngrohje	$Q = c \cdot m \cdot \Delta T$
$] 0, 5[$	$\rightarrow$	Shkrirje	$Q = \lambda \cdot m$
$] 5, 10[$	$\rightarrow$	Ngrohje	$Q = c \cdot m \cdot \Delta T$
$] 10, 15[$	$\rightarrow$	Avullim	$Q = q \cdot m$
$] 15, 20[$	$\rightarrow$	Ngrohje	$Q = c \cdot m \cdot \Delta T$

### 9.2 Energjia e Brendshme

$$U = \begin{cases} \frac{3}{2} \cdot R \cdot T \cdot n, & 1 \text{ atom} \\ \frac{5}{2} \cdot R \cdot T \cdot n, & 2 \text{ atome} \\ 3 \cdot R \cdot T \cdot n, & 3+ \text{ atome} \end{cases}$$

$$\begin{aligned} R &= N_A \cdot k_B \\ &= 6.02 \cdot 10^{23} \frac{1}{\text{mol}} \cdot 1.38 \cdot \frac{\text{m}^2 \text{kg}}{10^{23} \cdot \text{s}^2 \cdot \text{K}} \\ &= 8.31 \frac{\text{m}^2 \cdot \text{kg}}{\text{s}^2 \cdot \text{K} \cdot \text{mol}} \\ &= 8.31 \frac{\text{J}}{\text{mol} \cdot \text{K}} \end{aligned}$$

$$n = \frac{m}{M} = \frac{N}{N_A}$$

$$T(\text{K}) = T(^{\circ}\text{C}) + 273.15$$

## 10 Gazet Ideale

### 10.1 Ligji i gazeve

$$P \cdot V = N \cdot k_b \cdot T$$

$$P \cdot V = n \cdot (N_A \cdot k_B) \cdot T$$

$$P \cdot V = n \cdot R \cdot T$$

### 10.2 Energjia Kinetike

$$\epsilon_k = \frac{3}{2} \cdot k_B \cdot T$$

### 10.3 Parimi i pare i Termodinamikes

$$Q = \Delta U + A$$

"Sasia e nxehtesise qe merr nje sistem shkon pjeserisht per ndryshimin e energjise se brendshme dhe pjeserisht per kryerjen e punes"

## 10.4 Izoproceset

### 10.4.1 Procesi Ciklik

- 2 rruge Termodinamike
- Sisteme *Quasi-Statike*

$$\begin{cases} T_1 = T_2 \\ \Delta U = 0 \\ Q = A \end{cases}$$

### 10.4.2 Procesi Izotermik

$$\frac{P_1}{P_2} = \frac{V_2}{V_1}$$

$$\begin{cases} T_1 = T_2 \\ \Delta U = 0 \\ Q = A \end{cases}$$

### 10.4.3 Izobarik

$$\frac{V_1}{V_2} = \frac{T_1}{T_2}$$

$$\begin{cases} P_1 = P_2 \\ Q = \Delta U + A \end{cases}$$

### 10.4.4 Izohorik

$$\frac{P_1}{T_2} = \frac{P_2}{T_2}$$

$$\begin{cases} V_1 = V_2 \\ A = 0 \\ Q = \Delta U \end{cases}$$

### 10.4.5 Procesi Adiabatik

$$\begin{cases} Q = 0 \\ A = -\Delta U \end{cases}$$

## 10.5 Parimi i dyte i Termodinamikes

”Nuk mund te ekzistoje motorri i perjetshem”

$$A = Q_i - Q_f$$

$$A = T_i - T_f$$

Rendimenti  $\rightarrow \eta$

$$\left\{ \begin{array}{l} \eta = \frac{A}{Q_i} \\ \eta < 1 \end{array} \right\} \left\{ \begin{array}{l} \eta = \frac{A}{T_i} \\ \eta < 1 \end{array} \right\}$$

## 11 Fusha Elektrike

### 11.1 Intensiteti i Fushes Elektrike

$$E = \frac{F}{q} \left( \frac{N}{C} \right)$$

### 11.2 Ligji i Kulonit

$$\begin{aligned} |\vec{F}| &= k \cdot \frac{Q_1 \cdot Q_2}{\epsilon \cdot r^2} \\ &= \frac{1}{4 \cdot \pi \cdot \epsilon_0} \cdot \frac{Q_1 \cdot Q_2}{\epsilon \cdot r^2} \\ &= \frac{Q_1 \cdot Q_2}{4 \cdot \pi \cdot \epsilon_0 \cdot \epsilon \cdot r^2} \end{aligned}$$

Ku  $\epsilon_0 = 8.85 \cdot 10^{-12} \frac{F}{m}$  dhe  $k = 9 \cdot 10^9 \frac{N \cdot m^2}{C^{-2}}$

### 11.3 Intensiteti i Fushes Elektrike Qendrore

$$\begin{aligned} E &= \frac{F}{q} \\ &= \frac{\frac{Q_1 \cdot q}{4 \cdot \pi \cdot \epsilon_0 \cdot \epsilon \cdot r^2}}{q} \\ &= \frac{Q}{4 \cdot \pi \cdot \epsilon_0 \cdot \epsilon \cdot r^2} \end{aligned}$$

### 11.4 Potenciali Elektrik

$$V = \frac{W_P}{q}$$

### 11.5 Intensiteti i Fushes se Njetrajtshme

$$\begin{aligned} A &= W_P \\ F \cdot \Delta d &= \Delta V \cdot q \\ \frac{F}{q} &= \frac{\Delta V}{\Delta d} \\ E &= -\frac{\Delta V}{\Delta d} \end{aligned}$$

## 11.6 Potenciali i Fushes Qendrore

$$V = \frac{q}{4 \cdot \pi \cdot \epsilon_0 \cdot \epsilon \cdot r}$$

## 12 Kondensatoret

### 12.1 Kapaciteti

$$C = \frac{q}{V}(F)$$

#### 12.1.1 Kapaciteti i Percjellesit

$$C = \frac{q}{\Delta V} = \frac{q}{U}$$

### 12.2 Energjia e Kondesatorit

$$\begin{aligned} W &= \frac{Q \cdot V}{2} \\ &= \frac{(C \cdot V) \cdot V}{2} \\ &= \frac{C \cdot V^2}{2} \\ &= \frac{Q^2}{2 \cdot C} \end{aligned}$$

### 12.3 Dendesia e Ngarkesave

$$\text{lineare} \rightarrow \lambda, \quad \lambda = \frac{q}{l}$$

$$\text{siperfaqje} \rightarrow \sigma, \quad \sigma = \frac{q}{s}$$

$$\text{vellim} \rightarrow \rho, \quad \rho = \frac{q}{v}$$

### 12.4 Kapaciteti i Kondensatorit

$$\begin{cases} E = \frac{q}{S \cdot \epsilon \cdot \epsilon_0} \\ E = \frac{V}{d} \end{cases}$$

$$\frac{Q}{S \cdot \epsilon \cdot \epsilon_0} = \frac{V}{d}$$

$$\frac{q}{V} = C = \frac{\epsilon \cdot \epsilon_0 \cdot S}{d}$$

### 12.4.1 Depertueshmeria Elektrike

$$\epsilon = \frac{C}{C_0}$$

$$\epsilon_0 = \frac{1}{\mu_0 \cdot c}$$

$$\epsilon_0 \rightarrow \text{Pershkueshmeria elektrike ne vakum}$$

$$\mu_0 \rightarrow \text{Pershkueshmeria magnetike vakum}$$

$$c \rightarrow \text{Shpejtesia e drites ne vakum}$$

### 12.5 Lidhja e Kondensatoreve

#### 12.5.1 Ne Paralel

$$C = \sum C_i$$

$$\Delta V = V_1 = V_2 = V_3 = \dots = V_i$$

$$q = \sum q_i$$

#### 12.5.2 Ne Seri

$$\frac{1}{C} = \sum \frac{1}{C_i}$$

$$\Delta V = \sum V_i$$

$$q = q_1 = q_2 = q_3 = \dots = q_i$$

## 13 Rryma Elektrike

### 13.1 Rryma

$$I = \frac{\Delta Q}{\Delta t} \quad (A)$$

### 13.2 Dendesia e Rrymes

$$J = \frac{I}{S}$$

### 13.3 Forca Elektro Motorre

$$\epsilon = \frac{A}{q} = \frac{q \cdot V}{q} = \Delta V$$

### 13.4 Rezistenca Elektrike

$$R = \rho \cdot \frac{l}{S}$$

### 13.5 Ligji i Ohmit

$$I = \frac{\epsilon}{R + r}$$

### 13.6 Ligji i Joule-Lencit

$$Q = I^2 \cdot R \cdot \Delta t$$

### 13.7 Fuqia Elektrike

$$\begin{aligned} P &= \frac{W}{\Delta t} \\ &= \frac{V \cdot \Delta Q}{\Delta T} \\ &= V \cdot I \\ &= I^2 \cdot R \\ &= \\ & \quad x \end{aligned}$$