



4,5g

8,8g

$m$

(1-1  
(2-1

(  
(  
(3-1  
(4-1  
B A

D C B A

D

C

.PH

4-2

C

D C B A

.A

$M(H) = 1g / mol$  :  $M(C) = 12g / mol$   $M(O) = 16g / mol$  :



A

(II

$U_o = 284,5V$  : B A

B

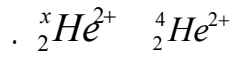
	$U_{AB}$ : 1-1-1 :2-1 B -2 $\vec{B}$ ) $R = 20cm$ . $\vec{B}$ 1-2 $\vec{v}$ :2-2 . C -3 . ( ) oy $\vec{E}$ (o, x, y) 1-3
	:2-3

D

:2-3

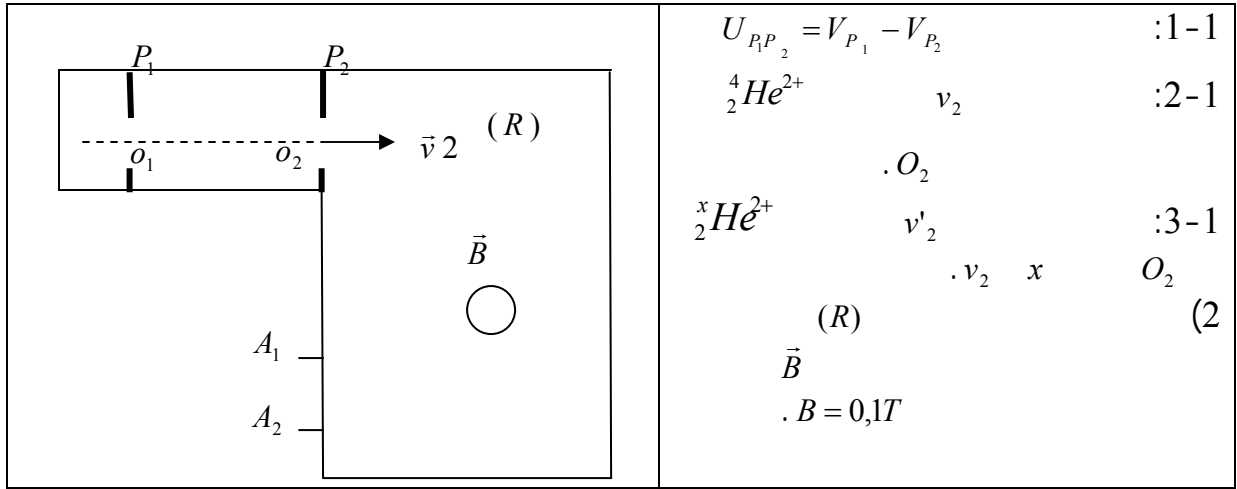
$m = 9,1 \times 10^{-31} kg$   $e = 1,6 \times 10^{-19} c$  :





$|U_{P_1P_2}| = 10^3 V :$

$P_2 \quad P_1$



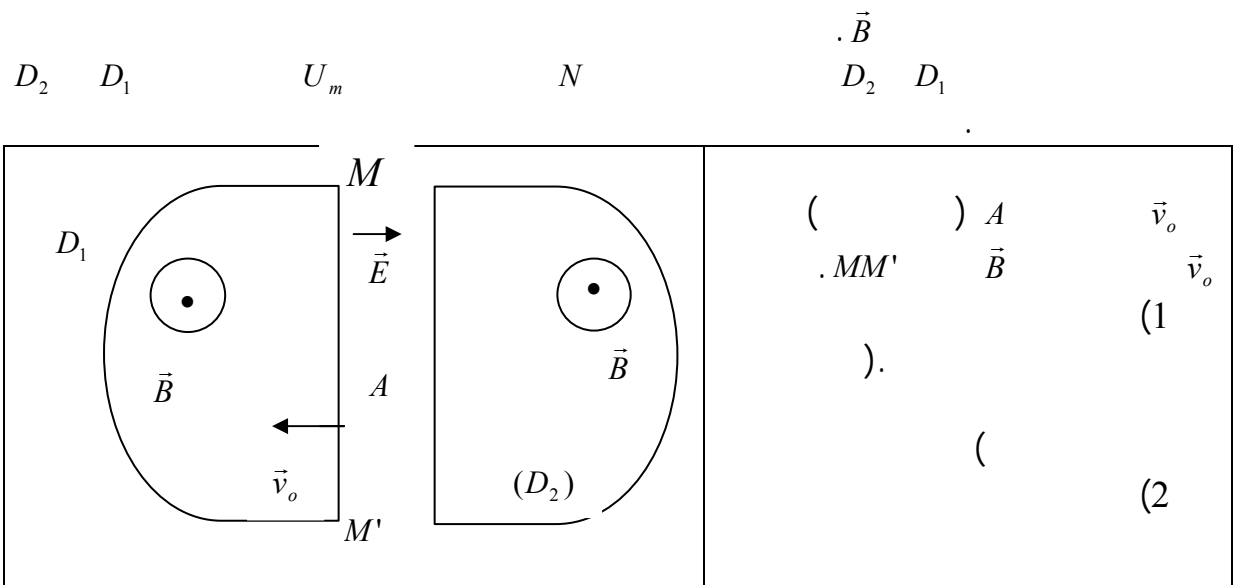
$v_1 \quad O_1$   
 $U_{P_1P_2} = V_{P_1} - V_{P_2} \quad :1-1$   
 ${}^4_2He^{2+} \quad v_2 \quad :2-1$   
 ${}^x_2He^{2+} \quad O_2 \quad :3-1$   
 $v'_2 \quad x \quad O_2$   
 $(R) \quad (2$   
 $\vec{B}$   
 $B = 0,1T$

$( \quad ) A_2 \quad {}^x_2He^{2+} \quad \vec{B} \quad :1- 2$   
 $(R) \quad :2- 2$   
 $x \quad \frac{O_2 A_2}{O_2 A_1} = 1,12 : \quad :3-2$

$q = e = 1,6 \cdot 10^{-19} c \quad :$   
 $m_p = 1,67 \times 10^{-27} kg \quad :$



(IV



$( \quad ) A \quad \vec{v}_o$   
 $MM' \quad \vec{B} \quad \vec{v}_o$   
 $(1$   
 $($   
 $(2$

$) \cdot 2 \times 10^7 m/s$   
 $($   
 $(3$   
 $(4$

$U_m = 4000V \quad B = 1T \quad :$   
 $m = 1,67 \times 10^{-27} kg \quad :$   
 $e = 1,6 \times 10^{-19} c \quad :$







$V_{P_1} > V_{P_2}$      $P_2$      $P_1$      $\vec{F}$      $\vec{E}$      $q > 0$      $\vec{F} = q\vec{E}$   
 $U_{P_1 P_2} > 0$     :

	<p style="text-align: right;">:2-1</p> <p style="text-align: center;"><math>{}^4_2\text{He}^{2+}</math></p> <p style="text-align: center;"><math>\Delta E_{C_A \rightarrow B} = W\vec{F}_{A \rightarrow B}</math></p> <p style="text-align: center;"><math>E_{C_1} = 0: \quad E_{C_2} - E_{C_1} = qU_{P_1 P_2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}mv_2^2 = qU_{P_1 P_2}</math>    :</p>
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$$v_2 = \sqrt{\frac{eU_{P_1 P_2}}{m({}^4_2\text{He}^{2+})}}$$

$m = 4 \times m_p$     :

$$v_2 = \sqrt{\frac{e \times U_{P_1 P_2}}{4 \times m_p}}$$



:3-1

$$v'_2 = \sqrt{\frac{e \times U_{P_1 P_2}}{m({}^x_2\text{He}^{2+})}}$$

$m = x \times m_p$     :



$$v'_2 = \sqrt{\frac{e \times U_{P_1 P_2}}{x \times m_p}}$$

:  $v_1$      $x$      $v_2'$

$$v'_2 = \sqrt{\frac{e \times U_{P_1 P_2}}{x \times m_p}} = \frac{2}{\sqrt{x}} \times \sqrt{\frac{e \times U_{P_1 P_2}}{4 \times m_p}}$$

$$v'_2 = \frac{2}{\sqrt{x}} \times v_2$$

$\vec{B}$     :1-2(2)

$\vec{F} = q \cdot \vec{v} \wedge \vec{B}$     :

(.    ) $\vec{B}$



