



TISHK INTERNATIONAL UNIVERSITY

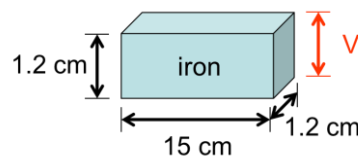
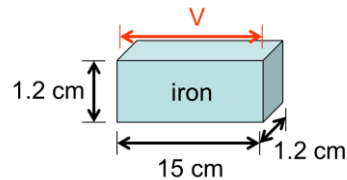
Faculty of Education
Department of Physics Education
Course: Electricity and magnetism II
Spring Term 2018-2019 Ac. Year

Code: PHYS. 226

Date : .00.2019
Duration : 2 hrs
Type of Exam: Sample final exam

Note: There are 40 points for the following questions.

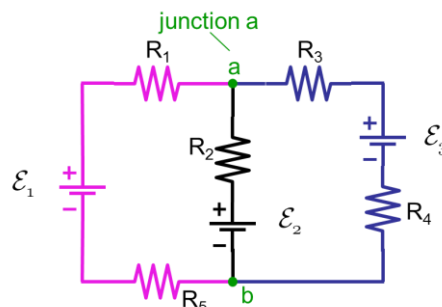
- 1- For iron $r = 9.68 \times 10^{-8} \text{ W.m}$. What is the resistance of the block? (3points)



- 2- Write the correct sign (+ or -) in the following blanks. (2points)

A)		$V_f - V_i = \dots\dots i R$
B)		$V_f - V_i = \dots\dots i R$
C)		$V_f - V_i = \dots\dots \mathcal{E}$
D)		$V_f - V_i = \dots\dots \mathcal{E}$

- 3- On the given diagram, show the direction of emf, each current path and the loops. Then find the magnitude of the current in each branch. If you know that $\mathcal{E}_1 = 3 \text{ V}$, $\mathcal{E}_2 = \mathcal{E}_3 = 6 \text{ V}$, $R_1 = R_3 = R_4 = R_5 = 2 \Omega$, $R_2 = 4 \Omega$. (7points)



Instructor's Name :

Signature :



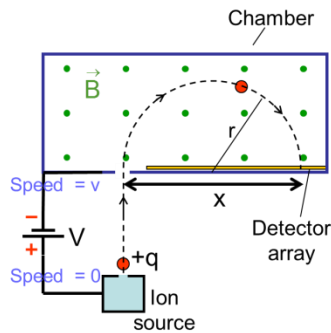
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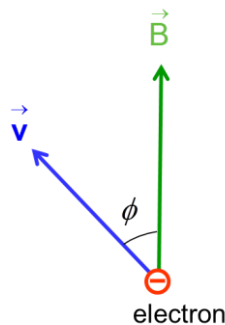
4- What is the formula of potential difference across a capacitor while charging? Find V_c potential difference for $t = 0$ and $t = \infty$. (3points)

5- What is the mass of the ion? If you know that Charge $q = 1.60 \times 10^{-19}$ C, $X = 1.63$ m, $B = 80.0$ mT and $V = 1.00$ kV (4points)

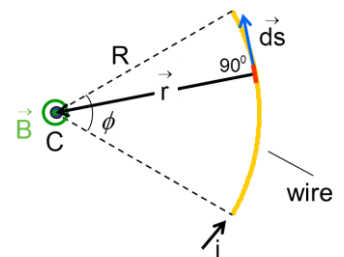


Mass spectrometer
Device to measure mass of ions

6- What is the pitch of the helical path taken by the electron? if you know that Kinetic energy = 22.5 eV, $B = 0.455$ mT, $\phi = 65.5^\circ$, $1 \text{ eV} = 1.6 \times 10^{-19} \text{ J}$ (5points)

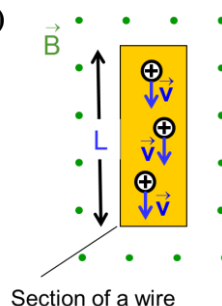


7- Derive magnetic field due to a circular arc of wire $B = \frac{\mu_0 i \phi}{4\pi R}$. (6points)



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8- Derive magnetic force on a wire $\vec{F}_B = i \vec{L} \times \vec{B}$. (3points)



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9- Choose the correct answer for the following questions. (7points)

- 1) Which one of the following statements concerning the conventional direction of current is true?
- a) The conventional direction of current is the hypothetical direction of movement of positive charges through the wires of an electric circuit.
 - b) The conventional direction of current is the direction of movement of electrons through the wires of an electric circuit.
 - c) The conventional direction of current is equal to the electromotive force of the battery in an electric circuit.
 - d) The conventional direction of current is always a clockwise movement around a circuit.
 - e) The conventional current is the one that moves in a dc circuit and an unconventional current is one that moves in an ac circuit.

2) Which

3) Which

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