

BARNES SCHOOL & JUNIOR COLLEGE, DEVLALI

Half Yearly Examination 2011

Time : 3 Hrs

Physics
(Practical)

Marks : 20

Class : 12

*(Candidates are allowed additional 15 minutes for only reading the paper.
They must NOT start writing during this time)*

ALL ANSWERS MUST BE WRITTEN IN THE ANSWER BOOKLET
PROVIDED SEPARATELY

If squared paper is used, it must be attached to the answer booklet.

Marks are given for a clear record of observations actually made, for their suitability and accuracy and for the use made of them.

A brief statement of the method may be given if necessary. The theory of the experiment is not required unless specially asked for.

Candidates are advised to record their observation as soon as they have been made.

All working, including rough work, should be done on the same sheet as, and adjacent to the rest of the answer.

Mathematical tables and squared paper are provided. The intended marks for the questions or parts of questions are given in brackets [].

Answer all questions

You should not spend more than one and a half hour on Question 1.

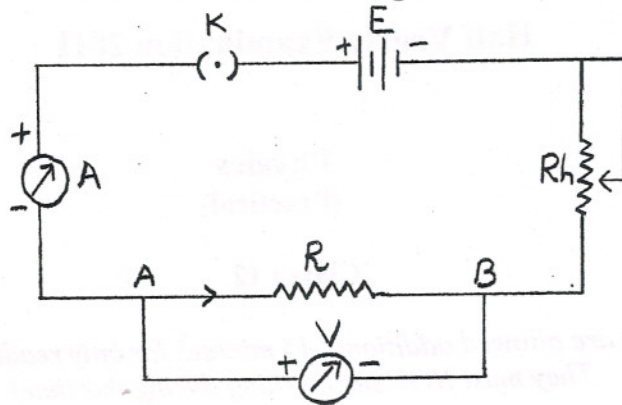
Question 1

[10]

Determine resistance per cm of the wire. You are provided with :

- (i) A 100 cm long and uniform wire AB attached to a meter scale on a wooden board. It is provided with binding terminals at its ends.
- (ii) A rheostat
- (iii) A dc source E (battery eliminator)
- (iv) A plug key K
- (v) An ammeter A
- (vi) A voltmeter V

Arrange the given apparatus as shown in Figure 1 below. Connect various components as shown in Figure 1. Ensure that all connections are tight.



Close the key K. Adjust the rheostat to increase the current and record the reading of ammeter and voltmeter for different value of current. Note that least count of the ammeter and voltmeter.

Repeat the experiment to obtain values of I and V.

Draw a graph of V against I and determine its slope $m = \frac{\Delta V}{\Delta I}$ (upto 3 significant figures)

Calculate the resistance per unit length of the wire $\lambda = \frac{m}{100}$ with unit where

L = 100cm.

Question 2

[10]

You are provided with Deflection magnetometer two strong short magnets of equal length and piece of chalk.

(i) Set up the deflection magnetometer, in Tan A position, ends of pointer read 0-0. Take magnet A, mark its mid point with chalk, place it along one arm of magnetometer, adjust the distance, such that the deflection of magnetic needle remains between $30^\circ - 60^\circ$. Note deflection of both ends of pointer and distance d.

(ii) Repeat the above step by reversing the magnet or changing the polarity. Similarly place the magnet on other arm and repeat the above two steps. You will obtain 8 set of reading for magnet A.

Repeat the above steps for magnet B and obtain another 8 set of readings. Now

compare the dipole moment of given bar magnet i.e. $\frac{M_A}{M_B} = \frac{\tan \theta_1}{\tan \theta_2}$