REPUBLIC OF RWANDA
SOUTHERN PROVINCE
HUYE DISTRICT

THE END OF TERM TWO COMPREHENSIVE ASSESSMENT

ADVANCED LEVEL



Subject: PHYSICS PRACTICE

Class: S4

Date : 18 March 2024

Duration: 9h00-10h30

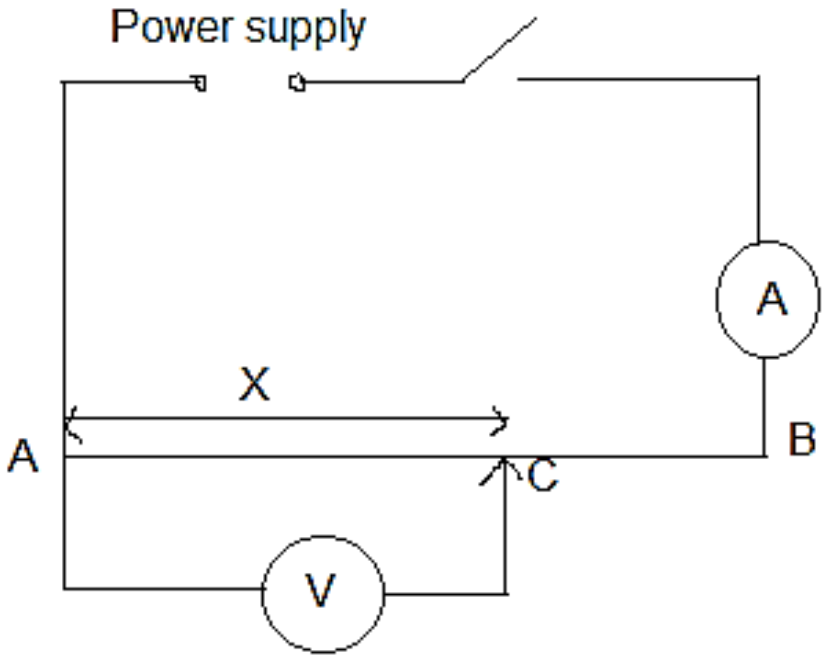
...../30 Marks

INSTRUCTIONS :

This paper consists only one compulsory question.

1) **Do not open this paper until you are told to do so.**
2) **Write your names correctly.**
3) **Read each question carefully before answering it.**
4) **You must use a blue pen.**
5) **Do not make unnecessary changes.**
6) **Check if all pages are completed.**

The S4 Class is investigating the resistance of a wire. The circuit used is shown below.



AB is a resistance wire.

The students place the sliding contact C on the resistance wire AB at a distance X=0.100 m from A.

They switch on and measure the potential difference V across the wire AC

They also measure the current I in the wire .The value of I is 0.38 A.

They repeat the procedure several times using different values of X.

The current I is 0.38 A for each value of X.

The readings are shown in the table below

X/	V/	R/
0.100	0.21	
0.300	0.59	
0.500	10.4	
0.700	1.42	
0.900	1.87	

a) (i)Complete the column headings in the table **(3marks)**

(ii)Calculate the resistance R of the section AC of the wire for each value of X **(5 marks)**

b) Plot a graph of R (y-axis) against X (x-axis).

Draw the best fit line **(10 marks)**

c) Within the limit of the experimental accuracy, what do you conclude about the variation of the resistance with distance along the wire?

Explain your answer **(4 marks)**

d) Using your graph, determine the value for R when X=0.750 m.

Show clearly on your graph how you obtained the necessary information **(4marks)**

e) A variable that may be difficult to control in this experiment is the heating effect of the current which affect the resistance of the wire.

(i)What will happen to the resistance of the wire if the heating effect of the current increases? **(2 marks)**

(ii)Suggest how you would minimize the heating effect **(2 marks)**

END !