MINEDUC
MUSANZE DISTRICT ADVANCED LEVEL EXAMINATION/ 2nd TERM/2024
DISTRICT COMPREHENSIVE ASSESSMENT, 2023-2024

SUBJECT: PRACTICAL PHYSICS/20marks

S4 COMBINATIONS:

PHYSICS-CHEMISTRY MATHEMATICS	**(PCM)**
MATH-PHYSICS-COMPUTER SCIENCE	**(MPC)**
PHYSICS-CHEMISTRY-BIOLOGY	**(PCB)**
MATH- PHYSICS- GEOGRAPHY	**(MPG)**
PHYSICS- ECONOMICS- MATHEMATICS	**(PEM)**

Duration:1h30

I**NSTRUCTIONS:**

Do not open this question paper until you are told to do so.
This paper consists of **one** compulsory question **(20marks)**
You may use a non-programmable calculator, geometric set and a ruler 30cm long.
Use only a **blue** or **black** pen and **pencil**.

A student investigates resistance.

Fig. 2.1 shows the circuit the student uses.

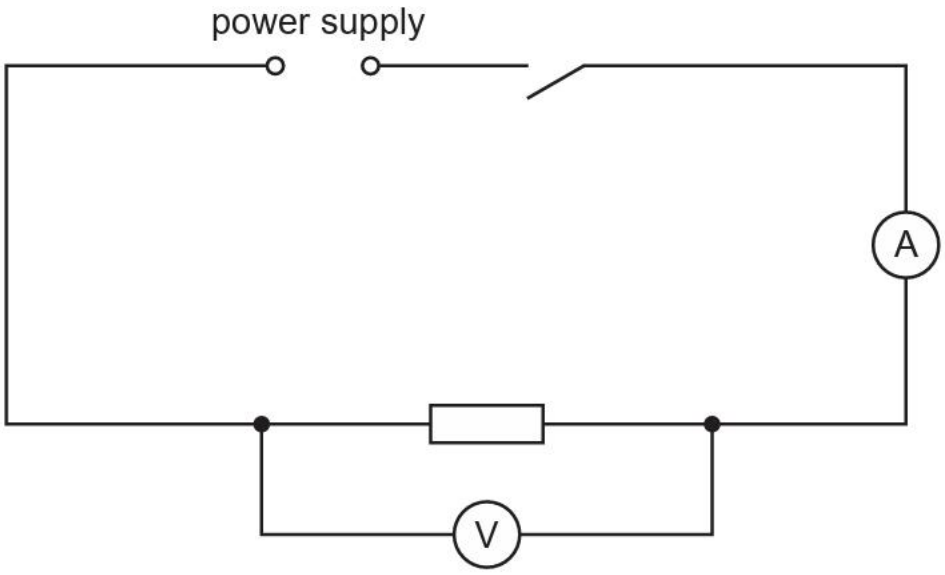


Fig. 2.1

(a) The student records the potential difference (p.d.) V_1 across the resistor and the current I_1 in the circuit. The meters are shown in **Fig. 2.2** and **Fig. 2.3**.
(i) Write down the readings. Include the units for potential difference, current or resistance where appropriate in all parts of the question.**(3marks)**

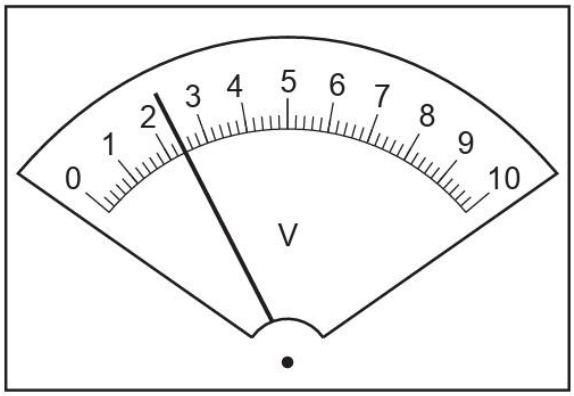


Fig. 2.2

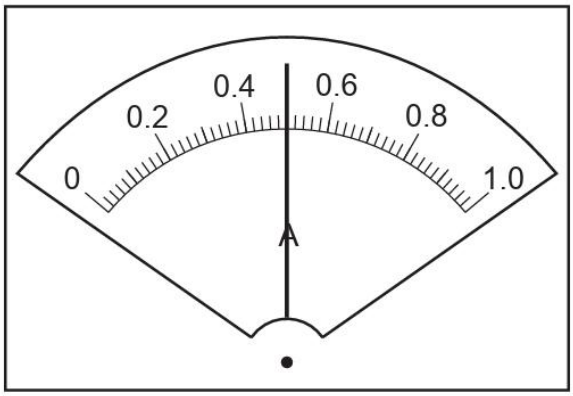


Fig. 2.3

(ii) Calculate the resistance $\mathbf{R_1}$ of the resistor.**(2marks)**

(b) The student connects a second resistor in series with the first resistor.

The student connects the voltmeter across both resistors and records the potential difference V_2=2.6V across both resistors and the current I_2=0.28A in the circuit. Calculate the resistance $\mathbf{R_S}$ of the resistors in series.**(2marks)**

(c) The student connects the third resistor in parallel with the first resistor. She connects the voltmeter across both resistors.

The student records the potential difference V_3=2.4V across the resistors and the current I_3=0.99A in the circuit.

Calculate the resistance $\mathbf{R_P}$ of the resistors in parallel. Give your answer to a suitable number of significant figures for this experiment.**(2marks)**

(d) Design the circuit diagram to show the circuit the student uses in part **(c)**.**(6marks)**

(e) Describe how to extend part **(c)** of this experiment to investigate the relationship between the combined resistance of identical resistors connected in parallel and the number of resistors.**(3marks)**

(f) In this type of electrical experiment, a variable resistor can be used to vary the current. Draw the circuit symbol for a variable resistor.**(2marks)**

END