

Nyaraya Cluster Examination

**Kenya Certificate of Secondary Education**

# **2023 Form Four Evaluation Programme**

**448/2 ELECTRICITY Paper 2**

**JULY/AUGUST 2023**

**Name……………………………………………… index no………….……………..**

**School…....................................................................candidate’s signature…………………**

**Date……………**

**448/2**

**ELECTRICITY**

**PAPER 2**

**PRACTICAL**

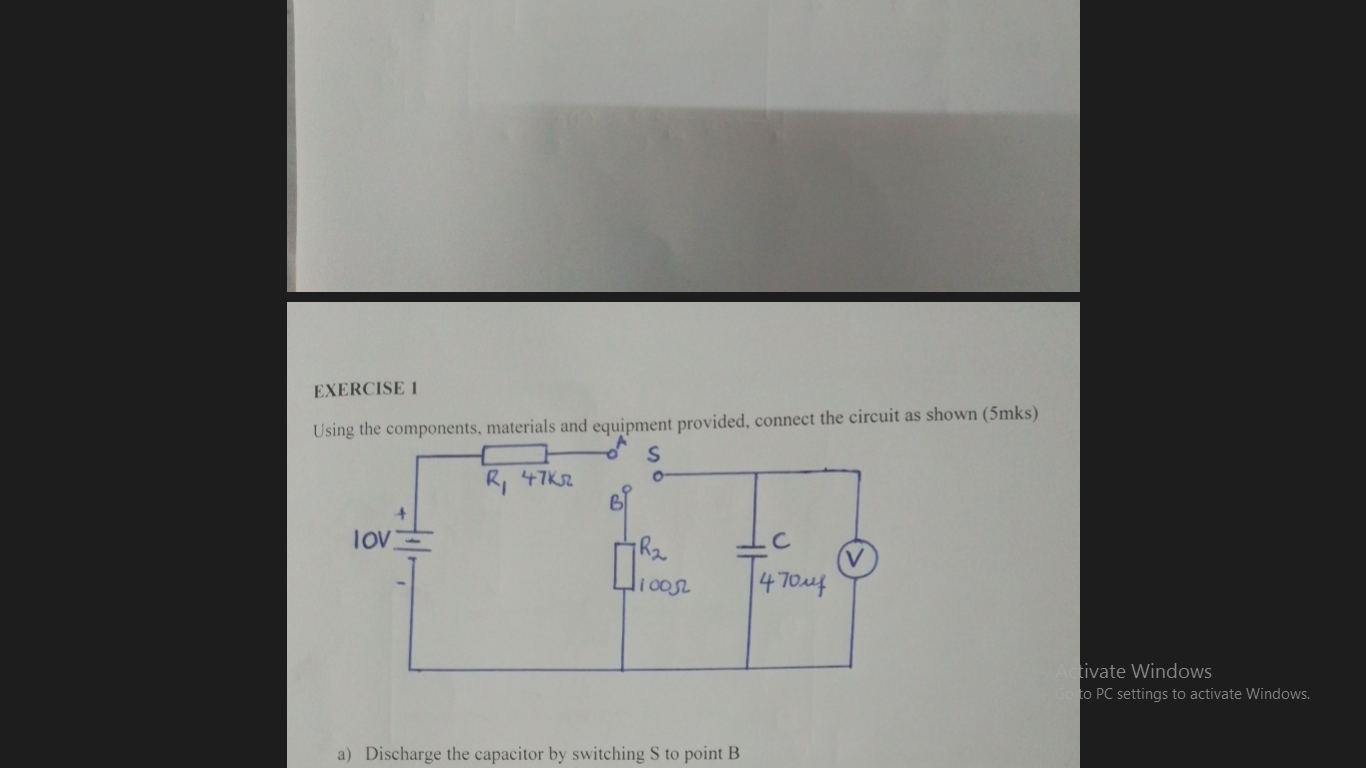
**Time: 2 ½ hours**

Instructions to candidates

* There are five exercises in this paper
* Candidates are allowed 30 minutes for each exercise
* At each station, candidates are not allowed to either review the previous stations work or read instructions for the other station
* All dimensions are millimeters unless otherwise stated.

**EXERCISE 1**

Using the components, materials and equipment provided, connect the circuit as shown (5mks)



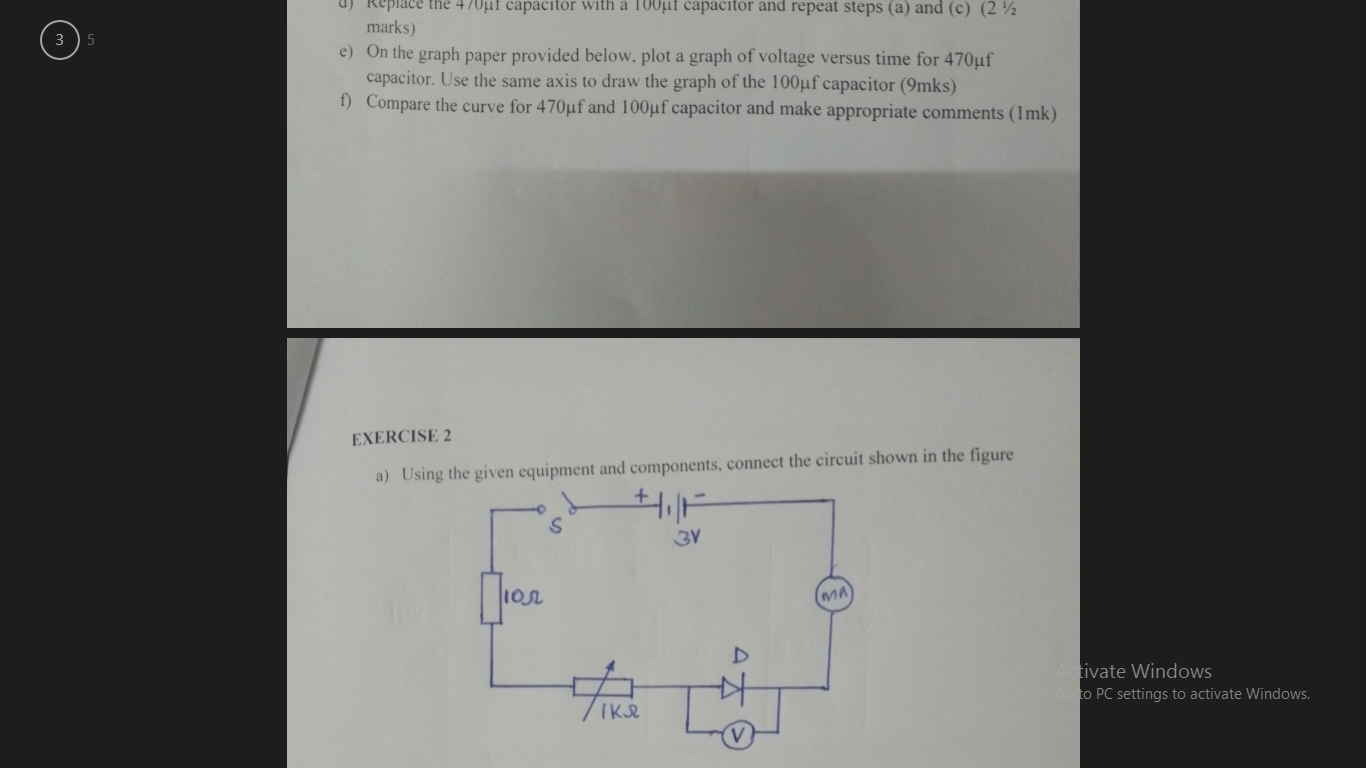
1. Discharge the capacitor by switching S to point B
2. Switch S to point A.Record in table 1 the time it takes the voltage across the capacitor to reach 6.3V

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Voltage (V) | 0 | 6.3 | 8.7 | 9.5 | 9.8 | 9.9 |
| Time(s)for 470µf |  |  |  |  |  |  |
| Time(s) for 100µf |  |  |  |  |  |  |

1. Repeat steps ( a) and (b) for the other voltage values given in table 1 (2 ½ mks)
2. Replace the 470µf capacitor with a 100µf capacitor and repeat steps (a) and (c) (2½ mks)
3. On the graph paper provided below, plot a graph of voltage versus time for 470µf capacitor. Use the same axis to draw the graph of the 100µf capacitor (9mks)
4. Compare the curve for 470µf and 100µf capacitor and make appropriate comments (1mk)

**EXERCISE 2**

1. Using the given equipment and components, connect the circuit shown in the figure



Let the examiner check your work (3½ mks)

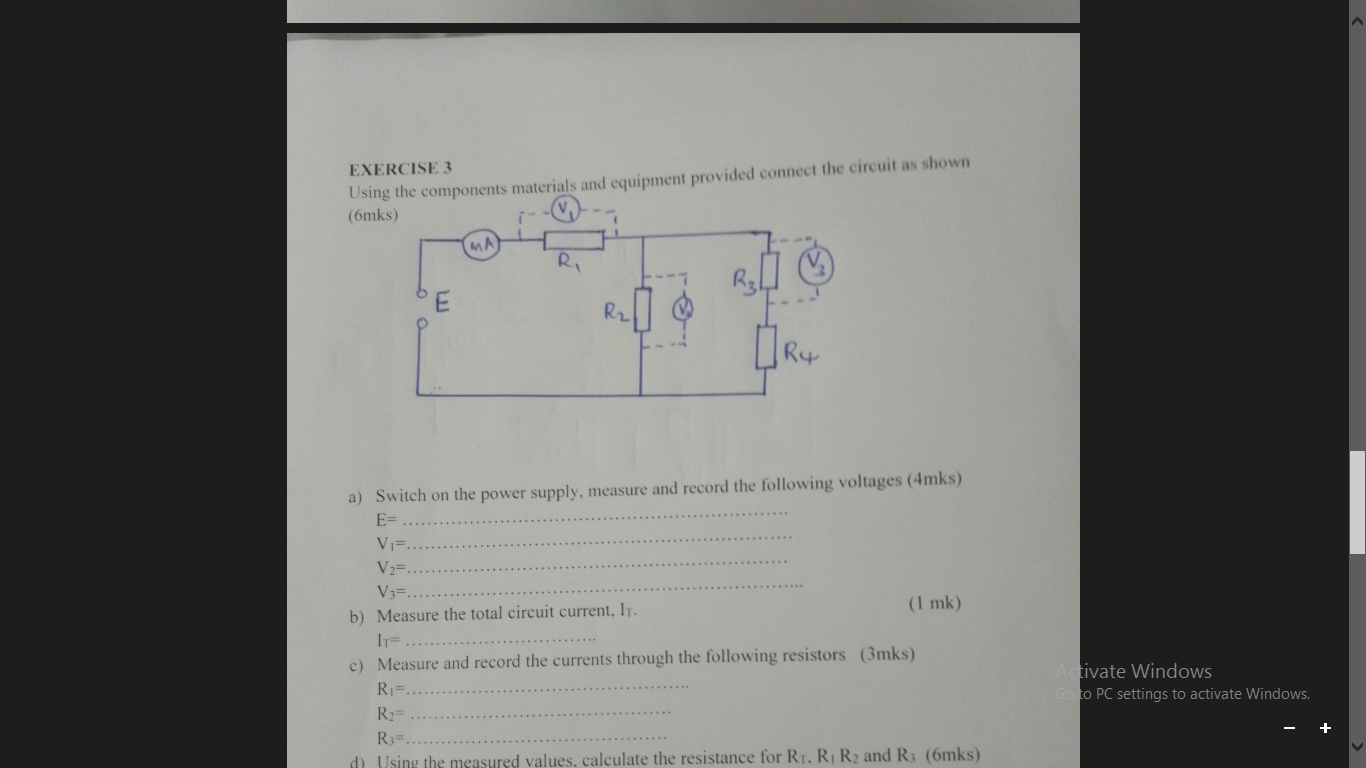
1. Close switch S
2. Adjust the potentiometer to obtain the values given in table 2. In each case measure and record the corresponding currents

|  |  |
| --- | --- |
| Voltage (v) | Current(mA) |
| 0.2 |  |
| 0.5 |  |
| 0.6 |  |
| 0.7 |  |
| 0.8 |  |

1. Using the values in the table plot a graph of current voltage (6½ mks)

**EXERCISE 3**

Using the components materials and equipment provided connect the circuit as shown (6mks)



1. Switch on the power supply, measure and record the following voltages (4mks)

E= ……………………………………………………….

V1=……………………………………………………….

V2=………………………………………………………

V3=………………………………………………………...

1. Measure the total circuit current, IT. (1 mk)

IT= …………………………..

1. Measure and record the currents through the following resistors (3mks)

R1=………………………………………..

R2= …………………………………….

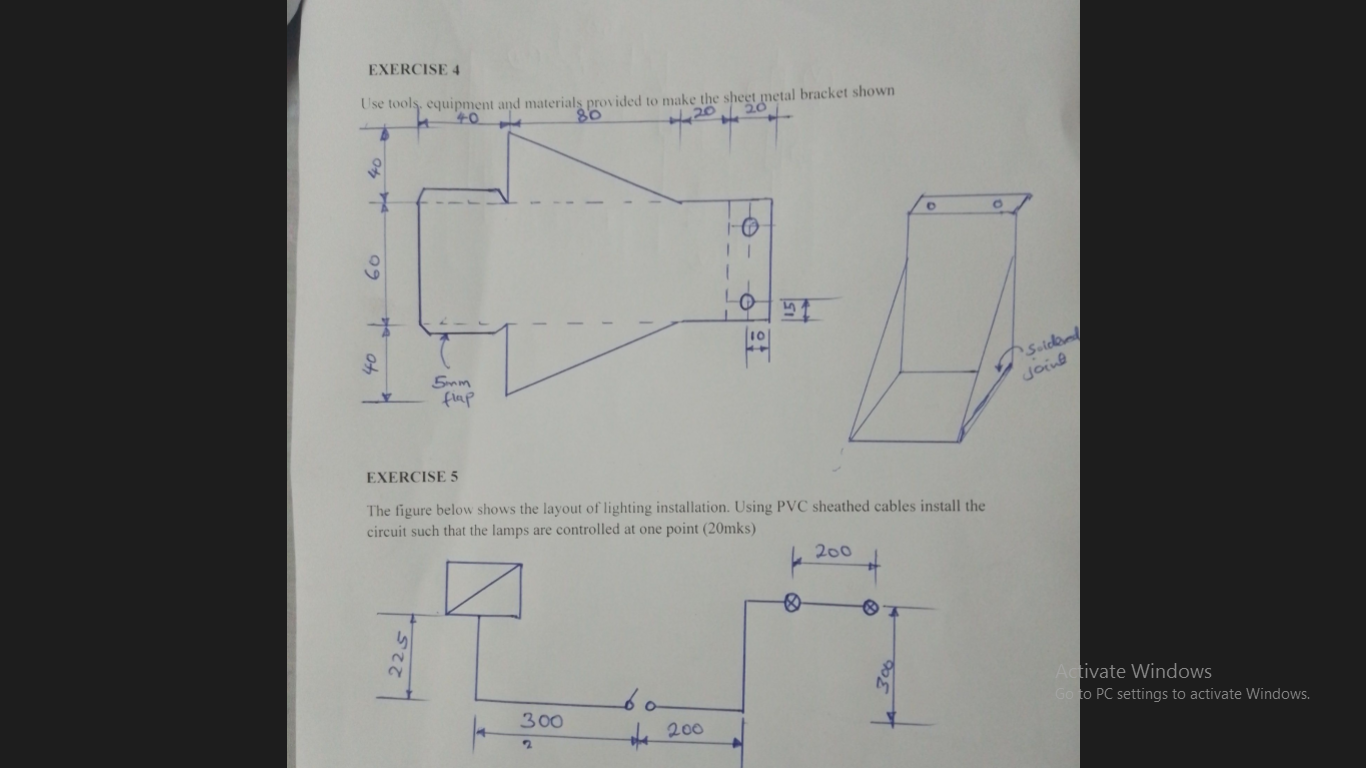
R3=…………………………………….

1. Using the measured values, calculate the resistance for RT, R1 R2 and R3 (6mks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**EXERCISE 4**

Use tools, equipment and materials provided to make the sheet metal bracket shown



**EXERCISE 5**

The figure below shows the layout of lighting installation. Using PVC sheathed cables install the circuit such that the lamps are controlled at one point (20mks)

