NAME;.....CLASS;.....ADMNO;.....
448/1
ELECTRICITY
TRIALS
PAPER 2
Practical
JULY 2013
2½ hours

ALLIANCE HIGH SCHOOL
ELECTRICITY
PAPER 2
TRIALS
Practials
TIME:2½hrs

Date of CAT;.....
Date of returning scripts;.....
Date of revising scripts;.....

100 %

INTRUCTIONS :
There are **FIVE** stations in this paper, attempt **ALL** the exercises.
Each exercise will be awarded a maximum of 20 marks.
At each station, candidates are not allowed to either review the previous station's work or read instructions for the other stations.
All dimensions are in millimeters unless otherwise stated.
Candidates require he following;

- Drawing instruments,
- Calculator / mathematical table.
  Drawing paper size A4

Do not write on this table

EXERCISES	1	2	3	4	5	TOTAL
MARKS						

This paper consists of –10-- printed pages.
Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing.

EXERCISE 1

Using the equipment and materials provided, perform the following tasks.

(a) Measure and record the resistance of the 100Ω resistor using the ohmmeter. [3marks]

(b) Set the potentiometer to the same value of the resistance measured in (a). [1mark]

(c) Set power supply to 12V. [1mark]

(d) Without disturbing the potentiometer and the power supply settings, connect the circuit as shown in figure 1.

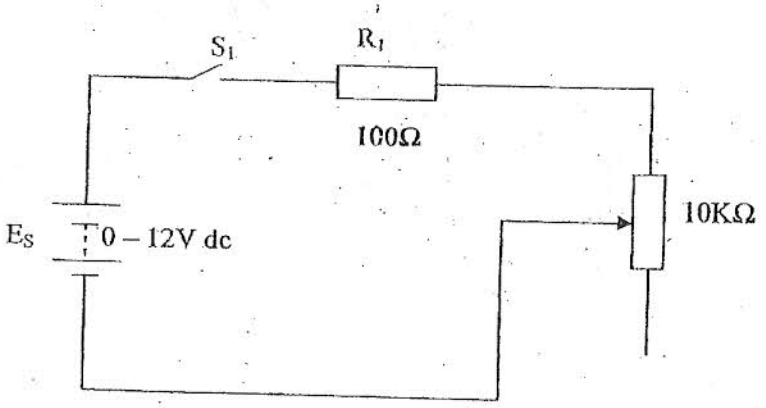

Figure 1

(e) Measure and record the volt drop across; (i) 100Ω resistor,

.....

(ii) potentiometer,

.....[2marks]

(f) Add the voltages measured in step (e),.....

.....

Comment on the sum in relation to the value in step (c) [3marks]

.....

.....

(g) Replace the potentiometer with 1MΩ resistor and the 100Ω resistor with 220KΩ resistor. [2marks]

(h) Repeat steps (e) and (f), for the new resistor values. [6marks]

(i) 1MΩ.....

(ii) 220KΩ.....

(iii) sum.....

Comments.....

.....

(i) State the significance of this experiment. [2marks]

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EXERCISE 2

Using he components, materials and equipment provided, connect the circuit as shown in Figure 2. [5½marks]

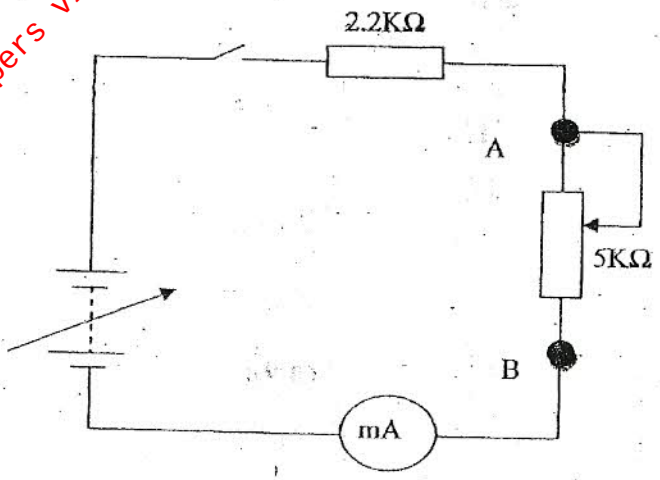

Figure 2

(a) Vary the potentiometer to obtain the voltages shown in **table 2**. Measure and record the corresponding currents. [3½marks]

Table 2

Voltage (V) across AB	0	2	4	6	8	12	16
Current (mA)							
Power dissipated							

(b) For each of the values in table 2, calculate and record the power dissipated in the potentiometer in the table. [3½marks]

(c) On the grid provided, plot a graph of power against current. [4½marks]

(d) From the graph; [2marks]

(i) State the maximum power dissipated in the potentiometer,

.....

.....

(ii) Determine the resistance of the potentiometer at maximum power.....

.....

(e) State one application of the circuit. [1mark]

.....

.....

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EXERCISE 3

(a) Using the materials and equipment provided, connect the circuit with S1 open as shown in figure 3. [2marks]

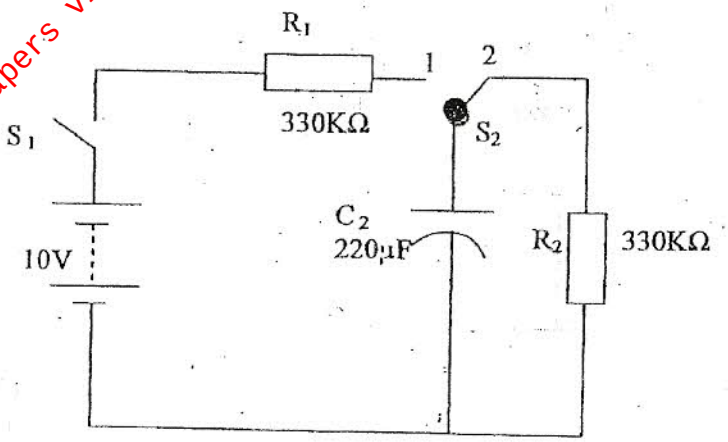


Figure 3

(b) With S_1 still open, switch S_2 to position 1.

(c) Close S_1, measure and record the voltage across capacitor C at time intervals given in table 3.

Time(s)	0	10	20	30	40	50	60	70
Voltage (V)								

Table 3 [4marks]

(d) Open S_1, leave S_2 at position 1 and quickly measure and record the voltage across the capacitor. .....V. [1mark]

(e) Switch S_2 to position 2, measure and record the voltage across capacitor C at time intervals given in table 4.

Time (S)	0	10	20	30	40	50	60	70
Voltage (V)								

Table 4 [4marks]

(f) On the same axis, plot the curves for voltage against time for he values obtained in;

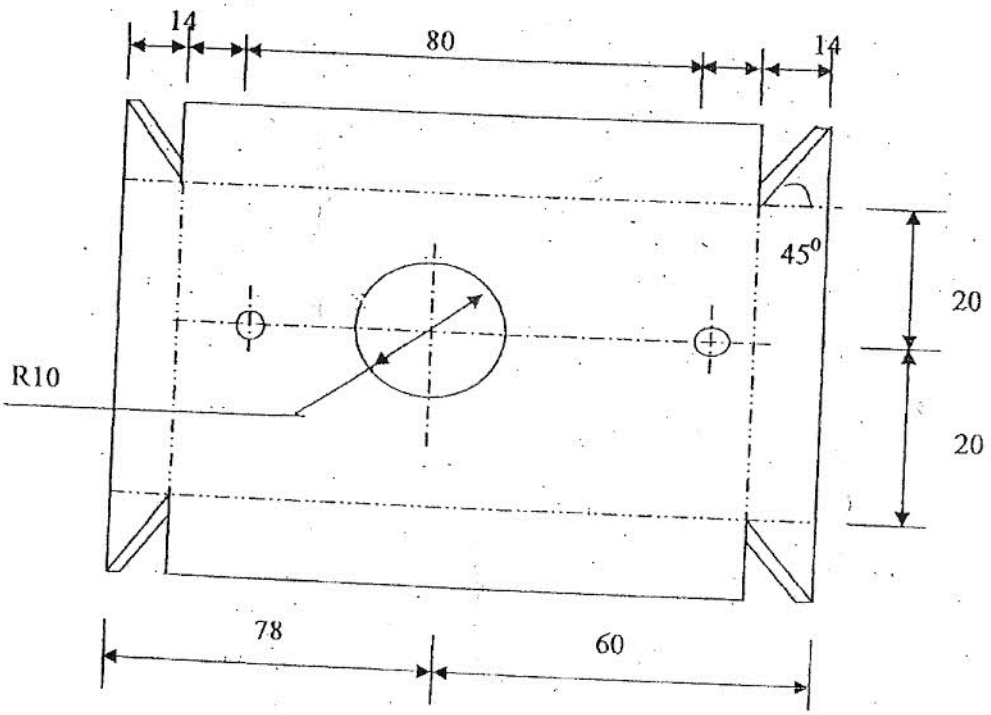
(i) Table 3;

(ii) Table 4. [8marks]

(g) State the effect of making R_1 much greater than 330KΩ. [1mark]

EXERCISE 4

Figure 4 shows a diagram of a lamp reflector. Using the materials and tools provided make the model of the fluorescent rain guard reflector.



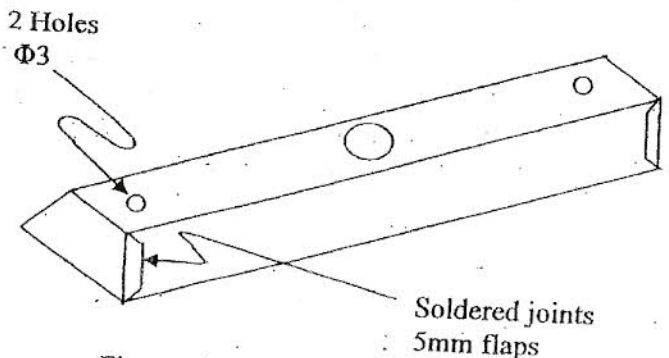


Figure 4

EXERCISE 5

Figure 5 shows a layout of a lighting circuit. Using PVC sheathed wiring system, install the circuit such that the lamp is controlled by the switch. Draw the wiring diagram.

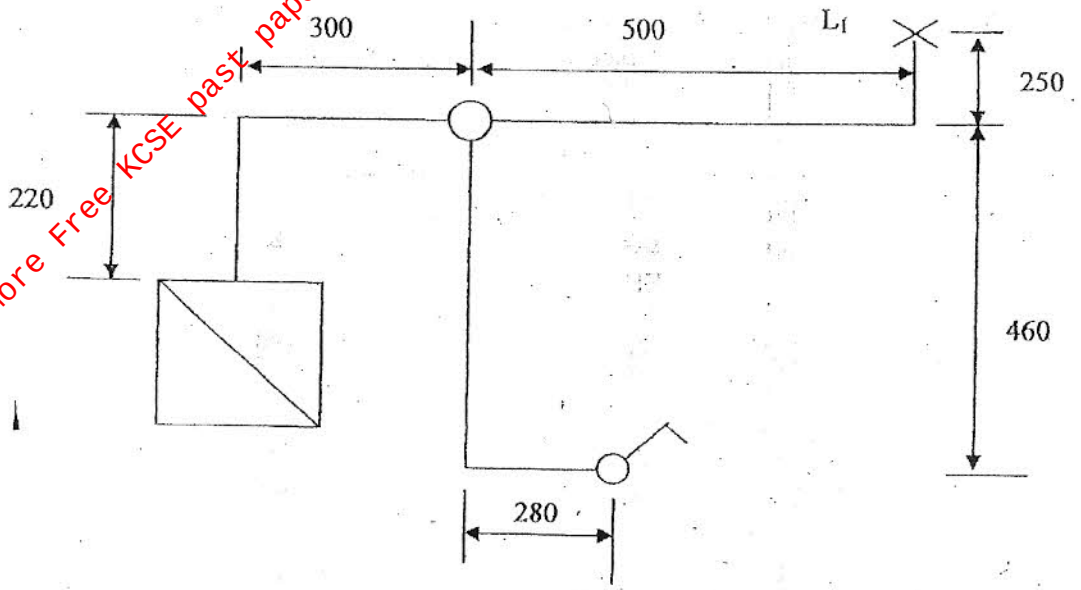


Figure 5

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