APPLIED ELECTRICITY 3 Practical 3 hours	3	Surname	Other Names
		Centre Number	Candidate's Number

2023 MOCK 2 APPLIED ELECTRICITY 3

SC2032 APPLIED ELECTRICITY 3 3 hours

ESSAY

[100 marks]

Instructions to Candidates

Write your **surname**, **other names**, **centre number** *and* **index number** *in the spaces provided at the top of this booklet.*

Answer **both** *questions.*

All *your readings, relevant observations and arithmetical workings should be written in your question paper, scrap paper must* **not** *be used. The record may be in pencil provided it is sufficiently neat and legible.* **Neither** *a full account of the method of carrying out the experiments* **nor** *a detailed description of the apparatus is required. The theory of the question is also* **not** *required.*

You are provided with the following apparatus:
One a.c. ammeter (0-250mA)
One capacitor, 2.5 µF, 240 VW;
One variable a.c. power supply (0-30V);
One 1 kΩ, ½ W resistor
One 100 Ω, ½ W resistor
One 200 Ω, ½ W resistor
One 300 Ω, ½ W resistor
One 400 Ω, ½ W resistor
One 500 Ω, ½ W resistor
three a.c. voltmeters (0- 30v);
one toggle switch;
one breadboard /Veroboard;
a set of hand tools;
connecting wires.

For Examiner's Use ONLY	
Question No.	**Mark**
1	
2	
Total	

Write **boldly** *and* **legibly** *in* **ink** *(preferably black) and state your answer precisely.*
Use **2B** *pencil to draw where necessary.*
Write your **answers** *in the spaces provided.*
Do **not** *write answer(s) beyond the spaces provided for the questions(s).*
Do ***not*** write ***more than one*** *answer on a line.*
Do **not** *tear off any part of this booklet. It is an examination malpractice if you do so.*

1. Aim: determine the lead angle in an a.c RC circuit.

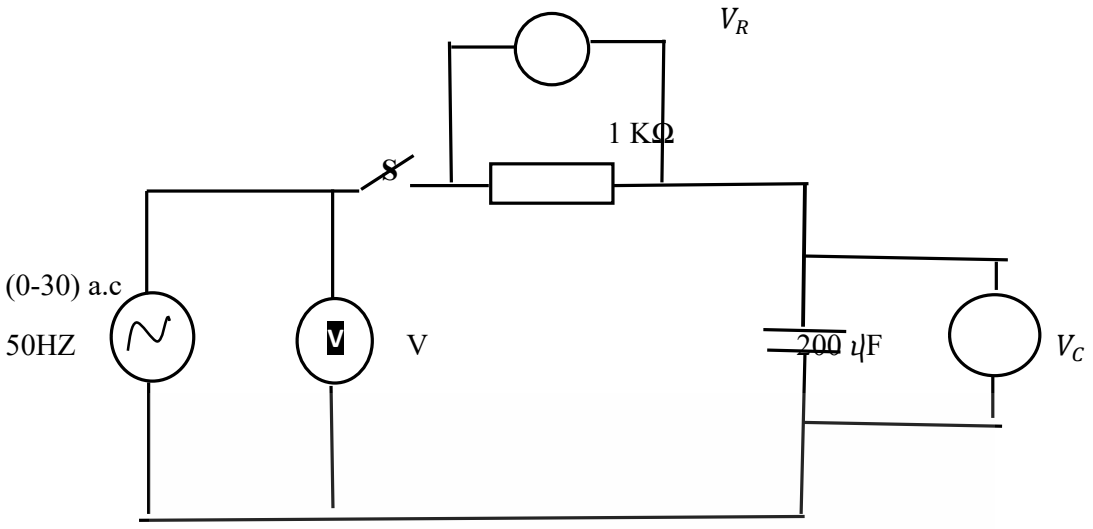

Figure 1

(a) Connect the circuit as shown in figure 1.
(b) Ask the supervisor to check the circuit connection.
(c) Copy the table 1 into your answer booklet.

Table 1

V_S	V_R (V)	V_C (V)
0		
5		
10		
15		
20		
25		

(d) Set the variable a.c. power supply to 0V and close the switch (S).
(e) Read and record in the Table 1, the voltmeter reading of V_R (V) and V_C (V)
(f) Open the switch, S
(g) Adjust the variable a.c. power supply to 5V and close the switch, S.
(h) Read and record in the Table 1, the voltmeter reading of V_R (V) and V_C (V)
(i) Repeat steps (f) to (h) for the other values of V_S in the Table 1.
(j) Plot a graph of V_C (V) on the vertical axis against V_R (V) on the horizontal axis.
(k) Determine
  (i) Slope of the graph
  (ii) Lead angle using the slope of the graph

2. Aim: To determine the effect of resistance on the current in an a.c. circuit.

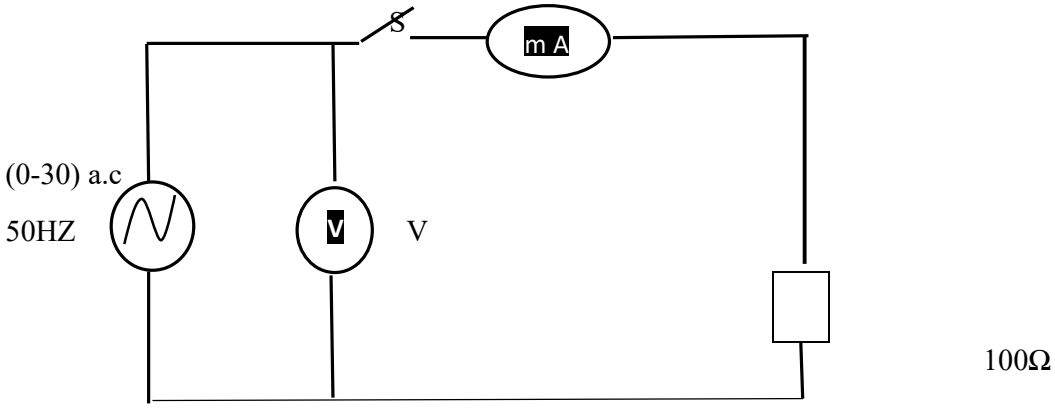

Figure 2

(a) Connect the circuit as shown in Figure 2.
(b) Ask the supervisor to check the connection.
(c) Coper Table 2 into your answer booklet

Resistance (Ω)	Current (m A)
100	
200	
300	
400	
500	

(d) Set the variable a.c power supply to 25V.
(e) Close the switch, S.
(f) Read and record in Table 2, the ammeter readings.
(g) Open the switch, S.
(h) Replace the 100Ω resistor with the 200Ω resistor and close the switch, S
(i) Read and record in Table 2 the corresponding ammeter reading.
(j) Repeat steps (g) to (i) for the other values of resistors in the Table 2.
(k) Plot a graph of current (m A) on the vertical axis against resistance (Ω) on the horizontal axis
(l) Comment on the graph

END OF PAPER