2024 WASSCE SUPER MOCK APPLIED ELECTRICITY 2
APPLIED ELECTRICITY
PAPER 2 1 hour
[50 marks]
SECTION A
Answer **three** *questions* **only** *from this section.*
Write your answers in **ink** *in the spaces provided.*
All *questions carry* **equal** *marks.*

1. (a) Sketch and label the following:

(i) A bar magnet

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……3 marks]

(ii) An electromagnet

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…… [3 marks]

(b) State **two** differences each between a bar magnet and an electromagnet

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…… [4 marks]

2. (a) Define the following terms:

(i) Electric power

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……..[2 marks]

(ii) Electric energy

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…… [4 marks]

(b) Three resistors are connected in parallel across a 12 volts supply. If the current flowing through each resistor for 45 seconds is 5 mA, 2 mA and 6 mA respectively, calculate the:

(i) quantity (Q) of electricity in the circuit;

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……[2 marks]

(iii) electrical power (P) consumed:

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……[2 marks]

(iv) Electrical energy (W) consumed.

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……[6 marks]

3. (a) Define periodic time of an alternating current.

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…… [2 marks]

(b) Table 1 shows the values of a voltage wave over half a cycle.

Time (milliseconds)	0	10	20	30	40	50	60	70	80	90	100
Voltage (volts)	0	2	4	6	8	10	8	6	4	2	0

Using a graph sheet, plot a graph of voltage (vertical axis) against time (horizontal axis).

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……[4 marks]

(c) From the graph plotted in (b), determine the

(i) Average value

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……[2 marks]

(iii) root-mean-square value.

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……2 marks]

4. (a) State

(i) **four** essential stages in obtaining a regulated d.c. supply from an a.c source;

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…… [4 marks]

(ii) the functions of the **last two** stages you have mentioned in (i).

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…… [4 marks]

(b) List **two** types of electron emission other than thermionic emission.

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…… [2 marks]

ALTERNATIVE A

FOR CANDIDATES IN GHANA ONLY

5. (a) Classify the following as AM or FM stations based on the frequency:

Frequency	Classification
103.5 MHz	
80 kHz	
97.3 MHz	
100.5 kHz	

[2 marks]

(b) State **three** advantages of frequency modulation over amplitude modulation

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……[3 marks]

(c) Draw and label the amplitude-modulated carrier wave.

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……[5 marks]

6. (a) Draw and label the diagrams of the **two** types of field effect transistors.

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……[6 marks]

(b) State **two** applications of the field effect transistor.

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……[2 marks]

(c) Mention any **two** advantages of field effect transistors over bipolar junction transistors.

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……[2 marks]

7. (a) Draw the:

(i) circuit symbol of a three-input AND gate

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…… [1 mark]

(ii) truth-table of the gate in (a) (i).

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…… [8 marks]

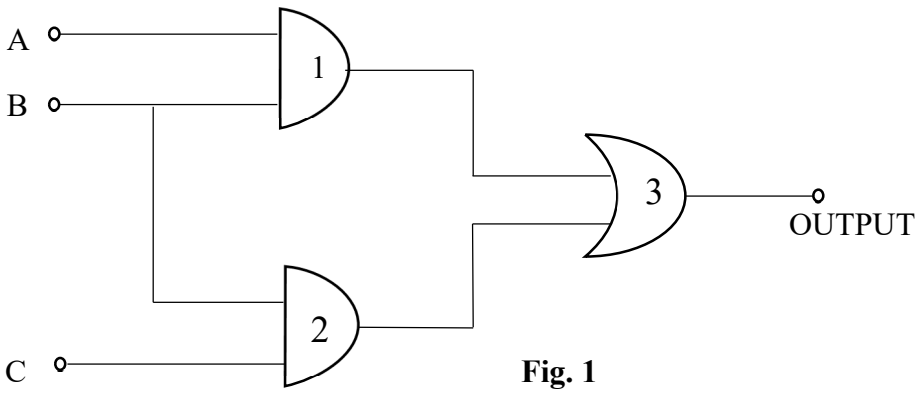

Fig. 1

(b) Write the Boolean expression for fig. **1**.

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…… [1 mark]

END OF PAPER