2023 SUPER MOCK APPLIED ELECTRICITY 2
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. Define the following:
i. Secondary emission
ii. Field emission
iii. Thermionic emission
iv. Photoelectric emission

[8 marks]

b. State two parameters of a triode valve.

[2marks]

2. a. Draw a circuit diagram of
i. P – channel JFET
ii. N – channel JFET
iii. PNP type of BJT
iv. NPN type of BJT
v. Thermistor
vi. Photo resistor
vii. Photo transistor
viii. Thyristor

[8 marks]

b. Explain how a bipolar transistor is connected.

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……
…… [2 mark]

3. a. i. Sketch and label and label a modulated output waveform with respect amplitude modulation.

ii. with the aid of the sketched waveform in (a. i), define percentage modulation.

b. State **three** components of frequencies of amplitude modulation.

c. List **three** disadvantages of frequency modulation

4. a. State the difference between series and parallel circuits in terms of the following parameters.:

i. current

ii. voltage

iii. resistance

Parameters	Series circuit	Parallel circuit

[6marks]

SECTION B

*Answer **two** questions **only** from this section*

5. An iron ring of mean circumference 50cm and cross-sectional area 1cm^2 is wound uniformly with 400 turns of wire. If a current of 0.07A flows in the windings with a flux of 6 x 10^{-6}Wb, calculate the

i. Magnetomotive force
ii. Flux density, B
iii. Magnetic field strength, H [6 marks]

b. State the electric circuit equivalent for the following magnetic parameters

i. Magnetic flux
ii. Magnetomotive force
iii. Reluctance
iv. Permeability

Magnetic	**Electric field**

[4 marks]

6. a. Define the following terms in a.c. theory.

i. average value
ii. r.m.s value
iii. peak-to-peak value

[6 marks]

b. Draw a sinusoidal waveform and indicate the following:

i. maximum value
ii. peak-to-peak value
iii. a cycle. [4 marks]

7. a. Describe with the aid of a sketch, the construction and principle of operation of a double wound transformer. [6 marks]

b. Explain what causes the copper loss in the transformer.

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……[2 marks]

c. Define the term voltage regulation as applied to a single-phase transformer.

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……[2 marks]

END OF PAPER