SIR ARTHUR LEWIS COMMUNITY COLLEGE

FACULTY OF ENGINEERING

ACADEMIC YEAR (2024/2025) – SEMESTER TWO

END OF SEMESTER EXAMINATION

LECTURER (S)	**:**	**Mr Arnaldo Sanchez Rojo**
PROGRAMME	**:**	**Electrical Engineering**
COURSE TITLE	**:**	**Electrical Principles II**
COURSE CODE	**:**	**ELT211**
LEVEL	**:**	**Associate Degree/ Year Twos**
PAPER	**:**	**One (1)**
DATE	**:**	**Monday, 5th May 2025**
COMMENCEMENT TIME	**:**	**9:00a.m.**
DURATION	**:**	**Two (2) Hours**
INVIGILATOR(S)	**:**	**M. St. Clair (Chief)** & K. Frederick
ROOM(S)	**:**	**LFT-1R-02**

GENERAL INFORMATION AND INSTRUCTIONS

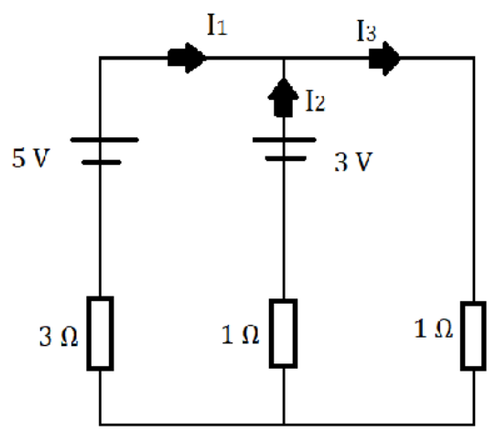
- This paper consist of One (1) Section with five (5) long answer questions. You are required to answer all questions within this section. Marks are awarded accordingly.
- Students must produce sufficient working steps, to justify solution.
- Write legibly in blue or black ink. Please number your responses accurately.
- The number in the brackets "[]" next to each question are the marks allocated.
- Students must sign **IN** and **OUT** on the examination class list.
- Students must **not** write their names on their answer sheets, only their ID number
- **Calculators are needed.**

DO NOT TURN THIS COVER SHEET UNTIL
YOU ARE TOLD TO DO SO!!!

SECTION A

Answer all questions on the foolscap provided.

1. Use Krichhoff's laws to determine the current flowing in each branch of the network shown in the figure. **[15 Marks]**



2. The winding of an electromagnet has an inductance of 15 H and a resistance of 30 Ω. When it is connected to a 120 V, d.c. supply, calculate:

   (A) the steady state value of current flowing in the winding,
   (B) the time constant of the circuit,
   (C) the value of the induced e.m.f. after 0.25 s,
   (D) the value of the current after 0.5 s **[20 Marks]**

3. A coil of inductance 159.2 mH and resistance 10 Ω is connected in **series** with a 50 Ω resistor to a 120 V, 50 Hz supply. Determine:

   (A) the impedance of the circuit,
   (B) the current in the circuit,
   (C) the circuit phase angle
   (D) the p.d. across the 50 Ω resistor
   (E) the p.d. across the coil **[25 Marks]**

4. A coil of inductance 100 mH and resistance 20 Ω is connected in **parallel** with a 40 μF capacitor across a 240 V, 50 Hz supply. Calculate:

   (A) the current in the coil and its phase angle
   (B) the current in the capacitor and its phase angle
   (C) the supply current and its phase angle
   (D) the circuit impedance
   (E) the power consumed
   (F) the apparent power
   (G) the reactive power. **[30 Marks]**

5. A transformer has a primary winding of 2500 turns and a voltage of 480 V. If we want to get 120 volts in the secondary winding.

   (A) How many turns should the secondary winding has?
   (B) Classify the transformer in Step-up or Step-down transformer and explain your answer. **[10 Marks]**

Total [100 Marks]

END OF EXAMINATION!!!