

SEMESTER 1 EXAMINATION 2023

SUBJECT: ELECTRONICS PAPER 1

STD: FYJC

MARKS: 50

DIV : M,K,H,J & J

TIME:3 Hrs.

NOTE : All questions are compulsory.

Figures to the right indicates full marks.

Draw diagrams wherever necessary.

Q.1 (A) Select the correct alternative and rewrite the sentence. 10

1. _____ components may be used for amplification, rectification, or to change energy from one form to another.
a. Active b. Passive c. discrete
2. _____ is a good conductor of electricity.
a. Plastic b. Gold c. Rubber
3. _____ is an example of an AC source.
a. Alternator b. Battery c. Rectifier
4. An ideal voltage source is one whose internal resistance is _____.
a. very high b. infinite c. zero
5. In a step down transformer secondary voltage is _____ the primary voltage.
a. Less than b. more than c. equal to
6. V_{th} is _____ voltage across output terminals.
a. Open circuit b. short circuit c. close circuit

(B) Answer any ONE of the following:

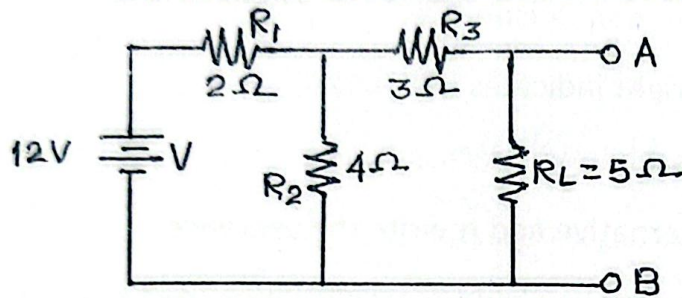
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1. Write steps to apply Thevenin's theorem.
2. State different types of AC sources. Explain any one.

Q.2 (A) Answer any TWO of the following:

6

1. Give reasons for internal resistance of source.
2. Explain the types of inductors according to the core material used.
3. Using Thevenin's theorem, find the voltage across the $5\text{K}\Omega$ resistor and calculate its current. Draw Thevenin's equivalent circuit.



(B) Answer any ONE of the following:

4

1. Compare carbon composition and wire wound resistor.
2. Explain Potentiometer with diagram.

Q.3 (A) Answer any TWO of the following:

6

1. State KVL and explain its sign conventions.
2. Define self- inductance and mutual inductance.
3. If two resistors of 150Ω each are connected in parallel, calculate the Equivalent resistance.

(B) Answer any ONE of the following:

4

1. Explain with diagram working principle of general purpose relay.
2. Define capacitance. Explain the factors affecting the capacitance of Capacitor.

Q.4.(A) Answer any TWO of the following:

6

1. If two Capacitors $150\mu\text{F}$ and $100\mu\text{F}$ are connected in series. Calculate the equivalent capacitance.

2. Decode the resistance value for the following colour codes.

Brown-Black-Brown-Gold

Yellow-Violet-Red-Silver

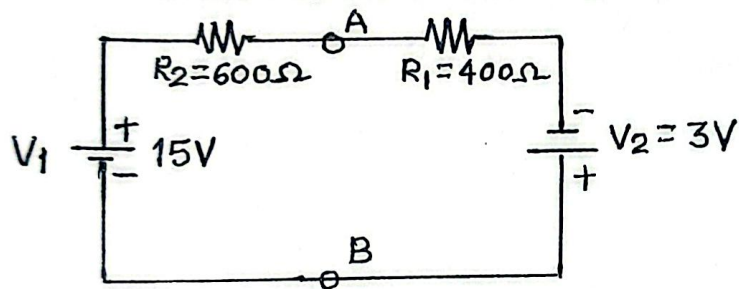
Orange-Orange-Yellow-Gold

3. State different losses in transformer.

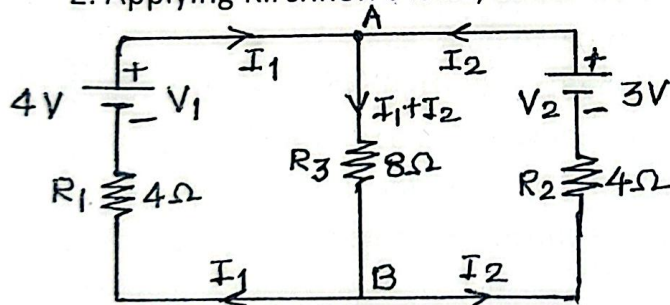
(B) Answer any ONE of the following:

4

1. In the following fig., find V_{AB} using Superposition theorem.



2. Applying Kirchhoff's laws, calculate the current in each branch.



Q.5 Answer any TWO of the following:

10

1. Draw the Resistors family tree diagram or write the types of Resistors.
2. Explain the charging of Capacitor with circuit diagram, graph and equation for instantaneous voltage across capacitor.
3. Draw the symbols of the following:

Thermistor, Variable resistor, Iron core inductor, LDR, SPDT switch.