

First Semester Exam-2022

Subject: Electronics Paper1

STD: FYJC

DIV: Morning *AST*

2.5 Hrs
Time: ~~3 Hrs~~

Marks: 50

NOTE: All questions are compulsory

Draw neat diagrams wherever necessary

Figures to the right indicate full marks

Use of log tables is allowed

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

4 marks

1. V_{TH} is -----voltage across output terminals.
 - a) Open circuit
 - b) Short circuit
 - c) full load
2. An ideal current source is one whose internal resistance is-----
 - a) Very high
 - b) infinite
 - c) zero
3. Gold colour of fourth band means resistance tolerance of-----
 - a) $\pm 5\%$
 - b) $\pm 10\%$
 - c) $\pm 20\%$
4. For maximum power transfer from the source to the load, the load resistance should be-----
 - a) Less than
 - b) Equal to

Q 1 (B) Attempt any two of the following:

6 marks

1. State the types of Inductors.
2. State types of DC sources and explain any two.
3. State KCL and explain its sign conventions.

Q 2 (A) Attempt any two of the following:

6 marks

1. What is Active and Passive components? Give examples
2. State the specifications of Resistors.
3. Explain the Transformer losses.

Q 2 (B) Attempt any one of the following:

4 marks

1. Write the types of Resistors using tree diagram.
2. Explain the working Principle of Transformer.

Q 3 (A) Attempt any two of the following:

6 marks

1. Explain maximum power transfer theorem.
2. Write three causes of internal impedance of the source.
3. Explain the current divider and voltage divider circuit.

Q 3(B) Attempt any one of the following:

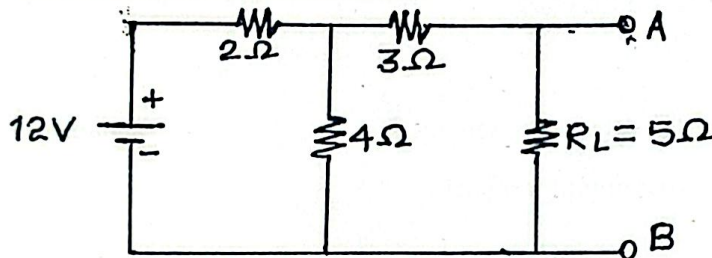
4 marks

1. State Thevenin's theorem. Write steps to apply Thevenin's theorem.
2. A DC source has no load voltage of 3V and internal resistance of 2Ω . Find the variation in the terminal voltage of the source.

Q 4(A) Attempt any two of the following:

6 marks

1. Write the units of the following:
 - I. Current
 - II. Voltage
 - III. Resistance
2. Using Thevenin's theorem, find the voltage across 5Ω resistor and calculate its current. Draw Thevenin's equivalent circuit.



3. Compare Carbon composition and Wire wound Resistors.

Q 4(B) Attempt any one of the following:

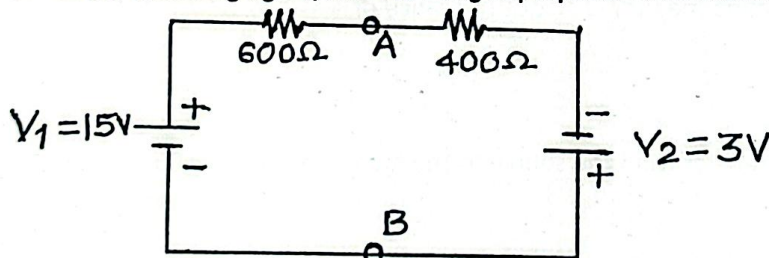
4 marks

1. State KVL and explain its sign conventions.
2. List the types of Capacitors.

Q 5(A) Attempt any two of the following:

6 marks

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



2. A power Transformer has 200 turns for primary and 10 turns for secondary. If primary voltage is 230 V, calculate secondary voltage.
3. Explain Practical DC voltage source.

Q 5(B) Attempt any one of the following:

4 marks

1. What is Potentiometer? Draw and explain its construction. Write its types.
2. Find the Norton's equivalent circuit.

