



**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING  
MID TERM EXAMINATION - NOV 2023**

**Semester :** Semester I - 2023

**Course Code :** EEE2002v02

**Course Name :** Sem I - EEE2002v02 - Electric circuit

**Analysis Program :** B. TECH

**Date :** 6-NOV-2023

**Time :** 9:30AM - 11:00AM

**Max Marks :** 50

**Weightage :** 25%

**Instructions:**

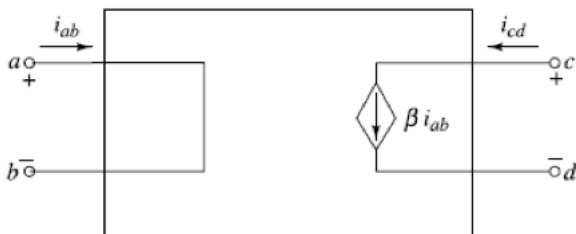
- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

**PART A**

**ANSWER ALL THE QUESTIONS**

**(5 X 2 = 10M)**

1. Mesh and Nodal analysis are two basic important techniques which are useful to find a solution in a network. Differentiate between mesh and nodal analysis.  
(CO1) [Knowledge]
2. Resistance is the property of a substance due to which it opposes the flow of electric current through it. Define 1 ohm.  
(CO1) [Knowledge]
3. Provide expression for power dissipated in resistor and also provide expression for current and voltage relationships in an inductor.  
(CO1) [Knowledge]
4. In the figure below, what is the expression  $\beta$  "beta" known as:



(CO2) [Knowledge]

5. Source Transformation can be applied to controlled sources as well. What are transformation we can perform during source transformation.

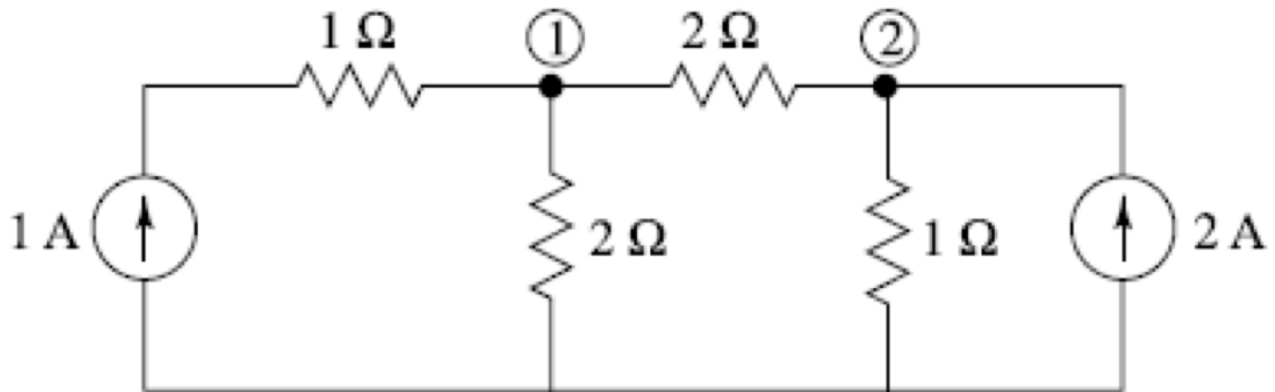
(CO2) [Knowledge]

**PART B**

**ANSWER ALL THE QUESTIONS**

**(2 X 10 = 20M)**

6. In mesh analysis, the currents in different meshes are assigned continuous paths so that they do not split at a junction into branch currents. If a network has a large number of voltage sources, it is useful to use mesh analysis. Find voltage at nodes 1 and 2.



(CO1) [Comprehension]

7. Nodal analysis provides a general procedure for analyzing circuits using node voltages as the circuit variables. Choosing node voltages instead of element voltages as circuit variables is convenient and reduces the number of equations one must solve simultaneously. Estimate the power dissipated in 5Ω resistor in the circuit

(fig.3) given below.

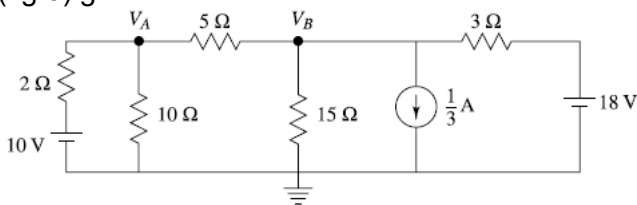


fig.3

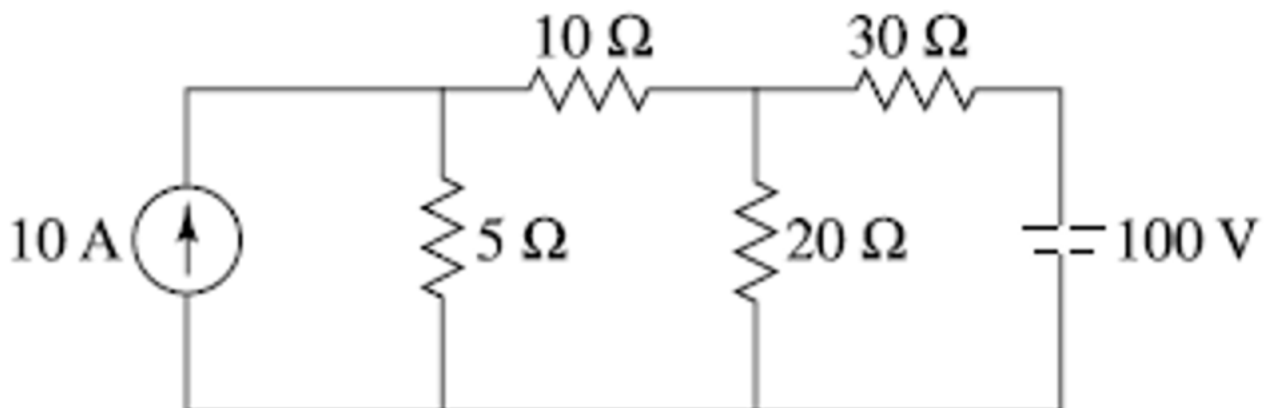
(CO1) [Comprehension]

**PART C**

**ANSWER THE FOLLOWING QUESTION**

**(1 X 20 = 20M)**

8. Find the current through 10-ohm resistance Thevni's Theorem.



(CO2) [Application]