KATHMANDU UNIVERSITY
Department of Electrical and Electronics Engineering
ELEMENTS OF ENGINEERING II – ENGG112

FIRST INTERNAL **Date: 5 July 2024**

Full Marks: 20

Time: 1 hour

Instruction: Write your name clearly in your answer sheet. Section 1 contains MCQ and filling in the blank and section 2 contains theoretical questions. Please write **the MCQ/Filling answers in your main answer sheet** indicating the question number and your choice of answer clearly. You are **not** required to copy the question (just **indicate the question number clearly**) in your answer sheet. You may use the last page of your main answer sheet for rough calculations.

Best of luck.

Section 1 (each question is of 1 mark) **[5 X 1 = 5marks]**

1. The total resistance seen across terminal ab in Figure 1 is _____.

[a] 0.5 Ω [b] 2 Ω [c] 2.5 Ω [d] 5 Ω

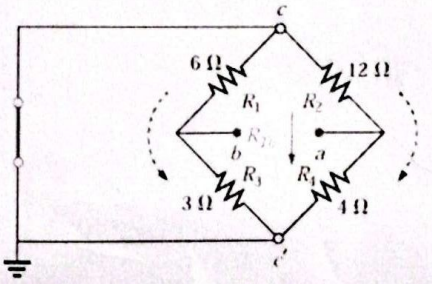

Figure: 1

2. The voltage E_{Th} in the circuit of Figure 2 is 4 V.

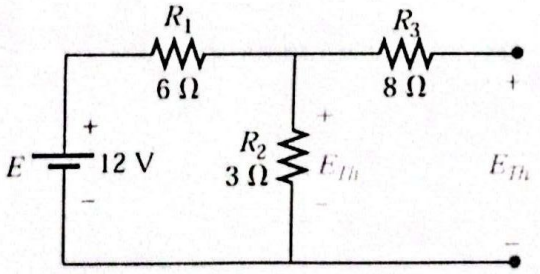

Figure 2

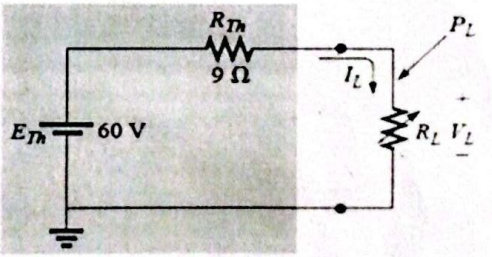

Figure 3

3. For the network in Figure 3, power delivered to the load (P_L) is given by _____.

[a] $\frac{3600}{4R_L}$ [b] $\frac{3600}{16R_L}$ [c] $\frac{3600R_L}{(9\Omega + R_L)^2}$ [d] $\frac{3600R_L}{16(9\Omega + R_L)^2}$

4. The current in open circuit is _____.

[a] minimum [b] maximum [c] negative [d] zero

5. For a star delta network with equal resistance, in general, _____.

[a] $R_Y = R_\Delta/3$ [b] $R_Y = 3R_\Delta$ [c] $R_Y = R_\Delta/\text{sqrt}(3)$ [d] $R_Y = \text{sqrt}(3)R_\Delta$

Section 2

6. Find the magnitude and polarity of voltage V in the figure 4. **[3 marks]**

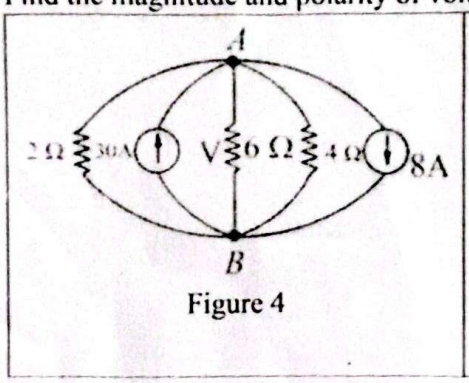

Figure 4

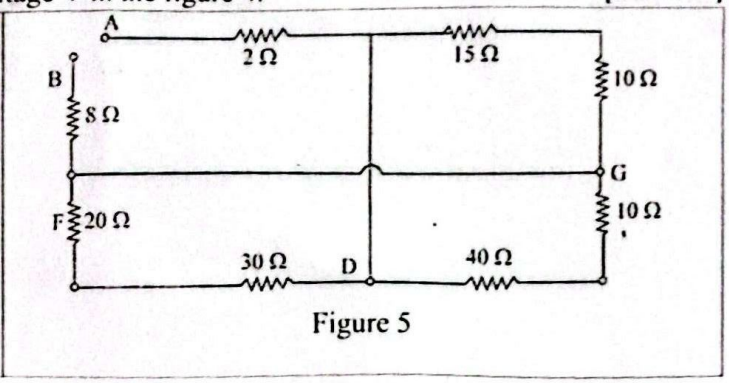

Figure 5

→22.5ohm

7. In figure 5shown above, find the equivalent resistance R_{AB} across points A and B. **[4 marks]**

8. Find the Find the Norton equivalent circuit for the network external to the 9-Ω resistor. **[4 marks]**

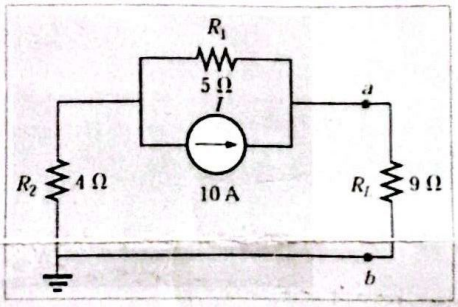

Figure 6

9. Using superposition, find the current through the R_1 resistor for the networks of figure.-7. **[4 marks]**

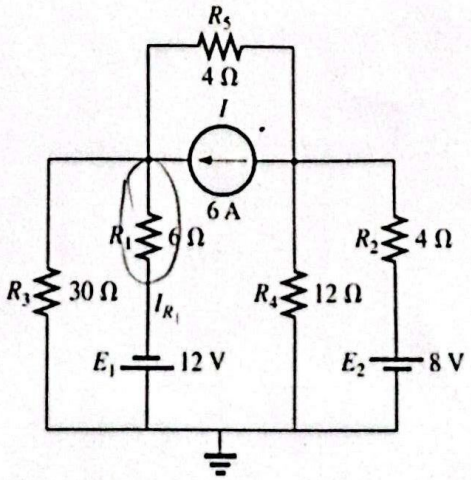

Figure 7