Kafrelsheikh University Faculty of Engineering Electrical Engineering Dept.

Subject Name: Electrical Circuits

Student Name : Academic Number :



Date: 10/03/2021

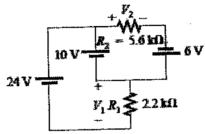
Time allowed: 90 minutes

Year: 1<sup>st</sup>. Year Final Exam Pages: 2

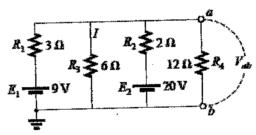
Intended learning outcomes (ILOs): [a1, a4, a5, b1, b2, b3, b5, c8, c9, d1, d3]

## Question No. 1 [15 Marks]

A-) Determine the unknown voltages using Kirchhoff's voltage law. [ 6 Marks ]

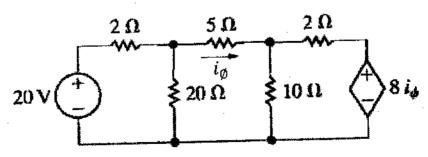


- B-) Find the voltage  $V_{ab}$  and the polarity of points (a) and (b) in the following circuit. [ 6 Marks ]
- C-) Find the magnitude and direction of the current I in the  $6\Omega$  resistor. [ 3 Marks ]



## Question No. 2 [20 Marks]

A-) Use the node-voltage method to find the power dissipated in the 5  $\Omega$  resistor in the circuit shown in the following Fig.: [7 Marks]



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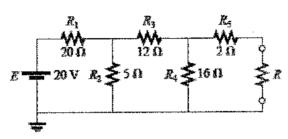
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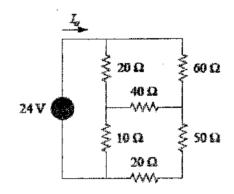
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B-) Find the Thévenin equivalent circuit for the network external to the resistor R in the following

## fig.: [7 Marks]

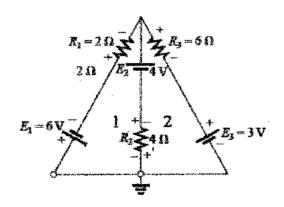


C-) Calculate  $I_o$  in the circuit of the following Fig. by using  $\Delta$  -Y transformation: [ 6 Marks ]



## Question No. 3 [10 Marks]

Find the branch currents of the following network: [ 10 Marks ]



With my best wishes Dr. Sherif Emam

Sherif Emam