Department of Computer Science and Engineering, Dhaka University
First In-Course Examination
1st Year 1st Semester, Session: 2015-2016
EEE – 1103, Electrical Circuits

Total Marks: 35 Time: 1 Hour

1. a) Define power and energy. 3
   b) i) Given no load voltage 120 V and full load voltage 118 V with full load current 10 A, determine the voltage regulation of the supply. 4
   ii) Determine the internal resistance of the supply.

2. a) Read the following information regarding the series circuit and write down the counterpart/ complementary statement for the parallel circuit. 4
   i) *The total resistance of a series configuration is the sum of the resistance levels.*
   ii) *The more resistors we add in series, the greater the resistance, no matter what their value.*
   iii) *The largest resistor in a series combination will have the most impact on the total resistance.*
   iv) *The current is the same at every point in a series circuit.*

   b) Using Kirchhoff's voltage law, find the unknown voltages for the configurations in **Fig. 1.** 3

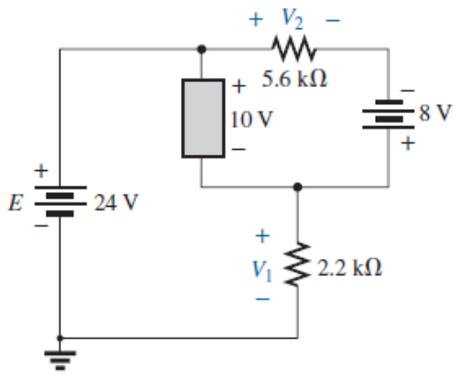

Fig.1

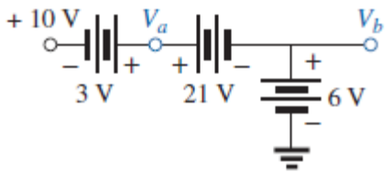

Fig 2

   c) Determine the voltages *Va*, *Vb*, and *Vab* for the networks in **Fig. 2.** 3
   d) For the integrated circuit in **Fig. 3**, determine V_0, V_{03}, V_2, V_{23}, V_{12}, and I_i. 4

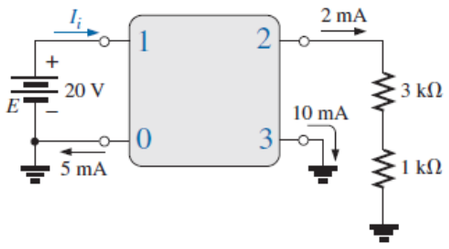

Fig. 3

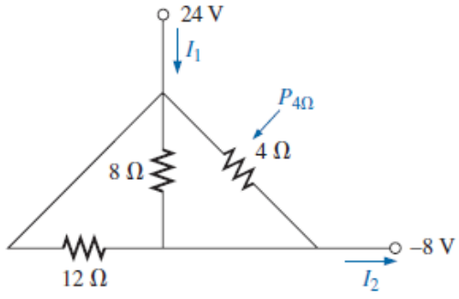

Fig. 4

3. a) Find the unknown quantities for the networks in **Fig. 4** using the information provided. 4
   b) Using Kirchhoff's current law, determine the unknown currents for the networks in **Fig. 5**. 3
   c) Assuming identical supplies, determine the current *I* and resistance *R* for the parallel network in **Fig. 6**. 4
   d) Determine the voltage *V* and the current *I* for the network in **Fig. 7**. 3

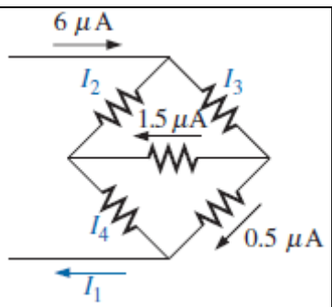

Fig 5

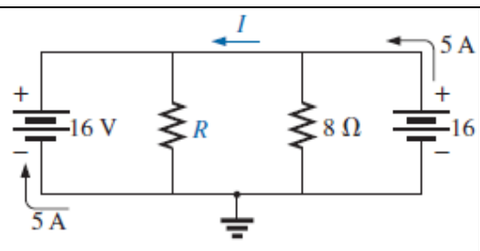

Fig. 6

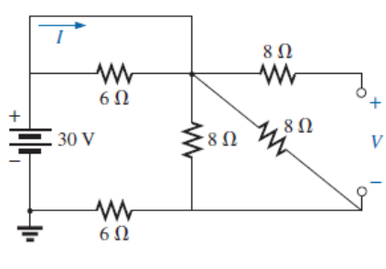

Fig. 7