HW. Questions Chapter 28 (Dr. Gondal-Phys102-25-27)

T-041

Q#1: The current in single-loop circuit is 5.0 A. When an additional resistance of 2.0 Ohm is added in series, the current drops to 4.0 A. What was the resistance in the original circuit? (Ans: 8.0 Ohm)

Q#2: Three wires are joined together at a junction. A 0.40-A current flows toward the junction from one wire and a 0.3-A current flows away from the junction in the second wire. The current in the third wire is (Ans: 0.10-A, away from the junction).

HW☞ Q#3: An electrical source with internal resistance r = 2.0 Ohm is used to operate a lamp of resistance R = 18 Ohm. What fraction of the total power is delivered to the lamp? (Ans: 0.9)

Q#4: In the circuit shown in figure 1, calculate potential difference VB-VA. The points A, B and C are three junctions. [Take the current I=2.0 A] (Ans: 8.0 V.)

HW☞ Q#5: A capacitor of capacitance C is discharging through a resistor of resistance R. In terms of RC, when will the energy stored in the capacitor reduces to one fifth of its initial value? (Ans: 0.80 RC.)

T-032

Q#1: A 6-V battery supplies a total of 48 W to two identical light bulbs connected in parallel. The resistance (in ohm) of each bulb is (Ans: 1.5)

Q#2: A capacitor, initially uncharged in a single-loop RC circuit, is charged to 85% of its final potential difference in 2.4 s. What is its time constant in seconds? (Ans:1.3)

Q#3: Find the potential difference (VB-VA) between points B and A of the circuit shown in figure (4) (Ans:- 10 volts)

HW☞ Q#4: Find the value of R1 in the circuit of figure (5) (Ans:6.0 ohms.)

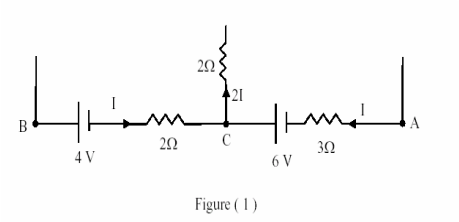

Figure (1)

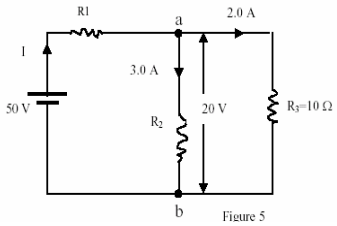

Figure 5

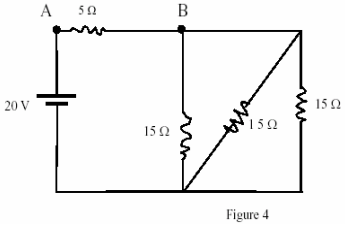

Figure 4

T031

Q#1 In figure 2, a battery of emf of 12-Volt and internal resistance of r = 3.0 Ohm is connected to a bulb of resistance R. If the bulb will light at a steady current of 0.1 A, what should the value of R be? (117 Ohm)

Q#2: A resistor R = 30*10**6 Ohm is connected in series with a capacitor C = 3.0 micro-F and a 21-Volt battery for long time. The battery was removed, then R and C are connected in a loop. What is the energy stored in the capacitor C after one minute? (Ans: `174 micro-J.`)

HW☞ Q#4: In figure 3, if R = 10 Ohm find the current in R. (Ans:- 0.2 A)

Q#3: What is the power dissipated in 4.0 Ohm resistor in Figure 4. (Ans: 9.0 W.)

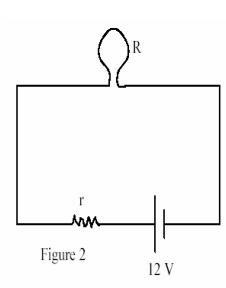

Figure 2

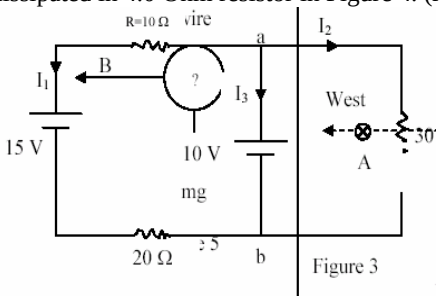

Figure 3

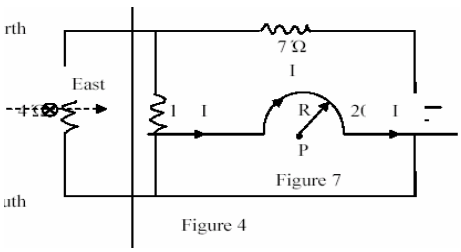

Figure 4

T-011 HW☞ **Q#1**: In the circuit shown in figure (4), the capacitor is initially uncharged. At t = 0, switch S is closed. If T denotes the time constant, then the current passing through the 3.0 Ohm resistor at t = T/100 is: (Ans: 0.5 A.)
Q#2: Three resistors, of resistance 2.0 Ohm, 4.0 Ohm and 6.0 Ohm, are connected to a 24 Volt battery as shown in figure (2). The power dissipated in the 2.0 Ohm resistor is: (Ans: 4 W.)
Q#3: If the current I in figure (5) is equal to 4.0 A, then the potential difference between point 1 and 2, i.e. (V2 -V1), is: (Ans: 40 Volts.)
Q#4: The current in the 8.0 Ohm resistor shown in the circuit of figure (3) is: (Ans: 3.0 A.)

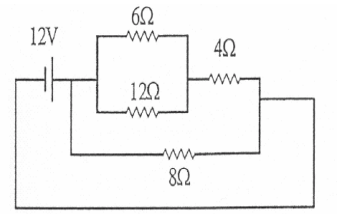

Figure (3)

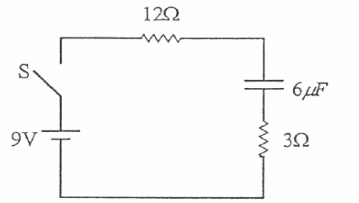

Figure (4)

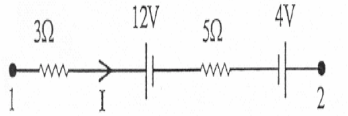

Figure (5)

T002 **Q#1**: The capacitor in figure (1) is initially charged to 50 V and then the switch is closed. What charge flows out of the capacitor during the first minute after the switch was closed? (Ans: 4.8 mC.)

HW☞ **Q#2**: In figure (2), if Vc-Vd=6.0 Volts, what is the emf of the battery? (Ans:10.8 Volts)
Q#3: The sum of the currents entering a junction equals the sum of the currents leaving that junction is a consequence of: (Ans: conservation of charge)

HW☞ **Q#4**: Find the values of the currents in figure (3). (Ans: I1 = 2 A, I2 = 2 A, I3 = -4 A.)
Q#5: Which of the following statements are WRONG:
1: In order to achieve the lowest resistance from several resistors, they should be connected in parallel.
2. In order to achieve the lowest capacitance from several capacitors, they should be connected in parallel.
3. The resistance of a conductor does not depend on temperature.
4. A dielectric increases the capacitance of a capacitor.
5. The electric flux through a closed surface is always zero. (Ans: `2, 3 and 5.`)

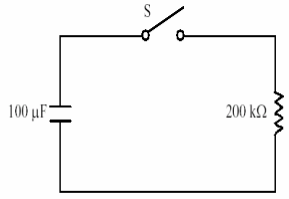

Figure 1

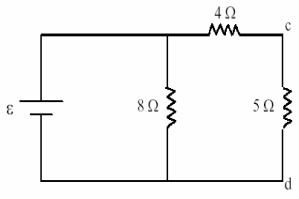

Figure 2

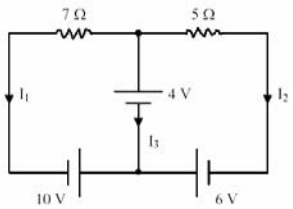

Figure 3

T-001

Q#1: Calculate the voltage E of the battery shown in Figure 1. (Ans: 20 V)
Q#2: The light bulbs in the circuit of Figure 2 are identical. When the switch S is closed, then: (Ans: nothing changes to the intensity of the light bulbs)

HW☞ **Q#3**: The circuit in Figure 3 has been connected for a long time. Find the potential difference Vb - Va. (Ans: 8 V)
Q#4: A 4.00 micro-F capacitor is charged to 24.0 V. Find the charge on the capacitor 4.00 milli-seconds after it is connected across a 200-Ohm resistor. (Ans: 0.647 micro-C)

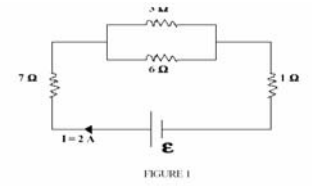

FIGURE 1

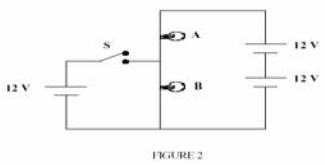

FIGURE 2

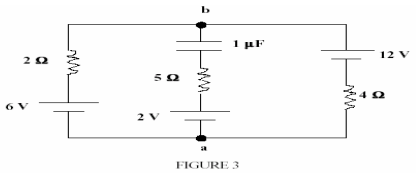

FIGURE 3