University of Technology
Mechanical Engineering Department
Final Examination 2013/2014

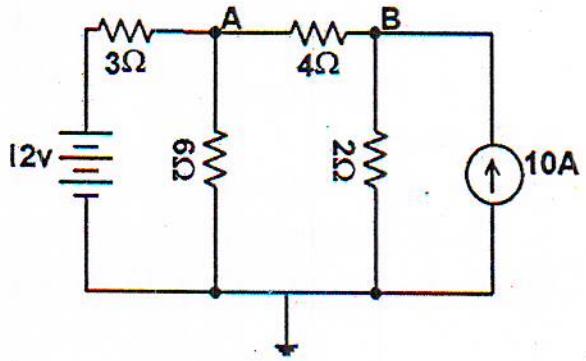
Subject: Elec. Engineering
Division: power stations
Examiner(s): Humam M. Salih

Year:1st
Exam Time: 3 Hrs.
Date: 1 / 6 / 2016

Answer (4) Questions Only
(each question of 15 mark)

Q1 : Using Thevenin's theorem ,calculate the current flowing through the (4Ω) resister shown in figure 1

Figure 1.



Q2: **Find the power dissipated in (6 Ω) resistance of the circuit shown in figure 2 applying Kirchhoff's voltage & current laws.**

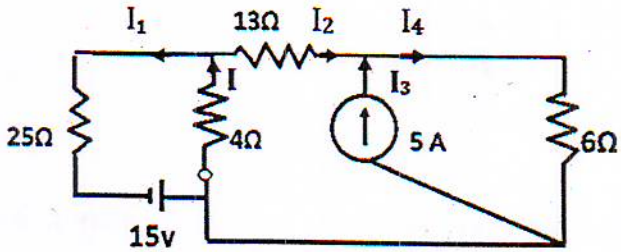
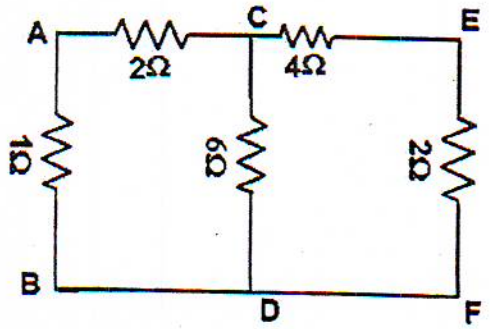


figure2

Q3:

A. **Explain the relation between current and voltage in the basic component of electrical circuit.**
B. **Find the equivalent resistance of the circuit given in figure 3 between A and B , between E and F**

Fig 3



University of Technology
Mechanical Engineering Department
Final Examination 2013/2014

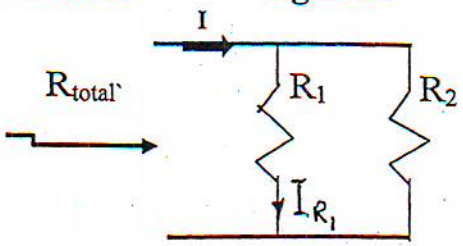
Subject: Elec. Engineering
Division: power stations
Examiner(s): Humam M. Salih

Year:1st
Exam Time: 3 Hrs.
Date: 1 / 6 / 2016

Q4 :

A. Copper coil has a wire diameter of (1 mm) and a length of (1 km). Connected in parallel to another coil made of Aluminum its diameter is (1mm). Find the length of the Aluminum wire if : figure 4

- $R_{total} = 9.738\ \Omega$
- $\rho\_Copper = 0.0159\ \mu\Omega$-m
- $\rho_{Aluminum} = 0.0254\ \mu\Omega$-m.



B. Explane :

1- Ohm's law, 1st law of Kirchhoff.
2- The elements of the electrical circuits.

C. How the current flows in the electrical circuit?

Q5: Prove that the current in resistance (R_1) shown in figure 4 above is:

$$I_{R_1} = I \times \frac{R_2}{R_1 + R_2}$$

Q6: Find the current in 17Ω resister of the network shown in figure 5 by using

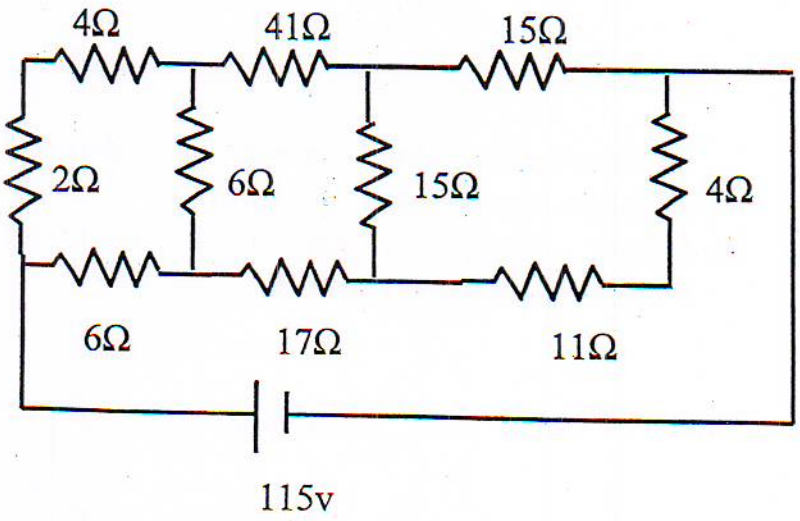


Figure 5

Good luck