MAY 2008

27 TUE

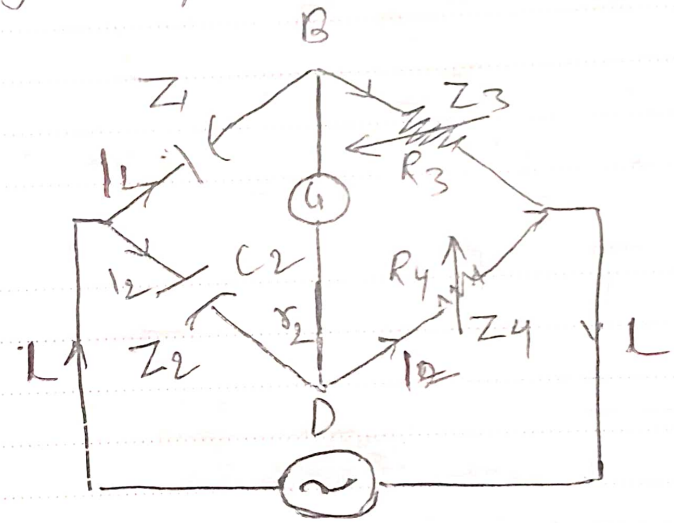
Degree – II(H) Paper-IV, Group-B.

21/02/2004

Name:- Govindkar Kumar.

Topic:- The De-Sauty's Bridge.

It is used to measure a capacitance by comparing it with another known-standard capacitance. The circuit has following components in figure given Below:-



28 WED

C_1 = Unknown capacitor. Whose value is to be found out.

C_2 = a standard capacitor for comparison

R_3, R_4 = non-inductive resistors.

The balance is obtained by varing the resistor R_3 or R_4.

2008 MAY

29 THU

Degree-II (H), paper-IV, Group-B.
21/02/2014

Name:- Giridhar Kumar

At ~~bl~~ balance condition

$$Z_1 Z_4 = Z_2 Z_3$$

$$\Rightarrow \left(\frac{1}{j\omega C_1}\right) \cdot R_4 = \left(\frac{1}{j\omega C_2}\right) R_3$$

$$\Rightarrow \frac{R_4}{R_3} = \frac{j\omega C_1}{j\omega C_2}$$

30 FRI

$$\Rightarrow \frac{R_4}{R_3} = \frac{C_1}{C_2} \quad \left[\frac{R_4}{R_3} = \frac{C_1}{C_2}\right]$$

$$\Rightarrow C_1 = C_2 \cdot \frac{R_4}{R_3} \Rightarrow \boxed{C_1 = C_2 \cdot \frac{R_4}{R_3}}$$

$$\Rightarrow C_2 = C_1 \cdot \frac{R_3}{R_4} \Rightarrow \boxed{C_2 = C_1 \cdot \frac{R_3}{R_4}}$$

MAY 2008

31 SAT

Degree - II (H), paper - IV, Group - B
21/04/2009

* Advantage of De Sauty's Bridge:-

(i) It is very simple circuit.

(ii) The calculation are also easy.

* Disadvantages of De Sauty's Bridge:-

If both the capacitors are not free from dielectric loss then it is not possible to obtain the balance condition. This method therefore can be used only for air capacitors, which are more or less, loss free.

H.W

Q The null point in a De Sauty bridge is obtained in the following conditions. The arm AB of the bridge contains an unknown capacitor C_1, the arm BC contains a resistor $R_3 = 1,400\ \Omega$, the arm CD contains a $R_4 = 1800\ \Omega$ and arm DA contains a capacitor C_2 of $0.15\ \mu F$. Find the unknow capacitor C_1.

→ Hint, use

$$C_1 = C_2 \cdot \frac{R_4}{R_3}$$