Lecture-22
Tutorial

Lecture Delivered by

Objectives

At the end of this lecture, student will be able to:

- Solve Self inductance
- Solve Mutual Inductance
- Solve B-H curve

Problem No 1

- A D.C supply of 200 V is applied across two mutually coupled coils in series, A and B. Coil A has a resistance of 2Ω and a self inductance of 0.5 H; coil B has a resistance of 8Ω and a self inductance of 2 H. At a certain instant after the circuit is switched on, the current is 10 A and increasing a at rate of 25 A/s. Determine

  (a) the mutual inductance between the coils, and

  (b) the coefficient of coupling.

Problem No 2

- Two coils are connected in series and their total inductance is measured as 0.12 H, and when the connection to one coil is reversed, the total inductance is measured as 0.04 H. If the coefficient of coupling is 0.8, determine

  (a) the self inductance of each coil, and

  (b) the mutual inductance between the coils

Problem No 3

- A hysteresis loop is plotted to scales of 1cm = 0.004T and 1cm = 10AT/m and has an area of 200cm^2. If the ferromagnetic circuit for the loop has a volume of 0.02m^3 and operates at 60Hz frequency. Determine the hysteresis loss for the ferromagnetic specimen

Problem No 4

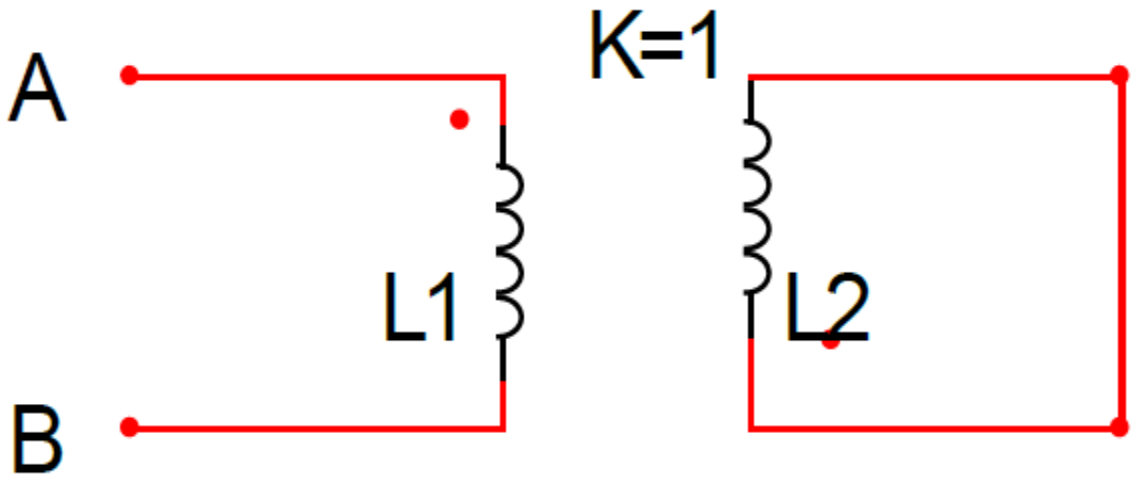
- Results of a test used to separate the hysteresis and eddy current loses in the core of a transformer winding gave the following results

Total core loss(W)	48	96	160	240
Frequency(Hz)	40	60	80	100

If the flux density is held constant throughout the test, determine the values of the hysteresis and eddy current losses at 50Hz.

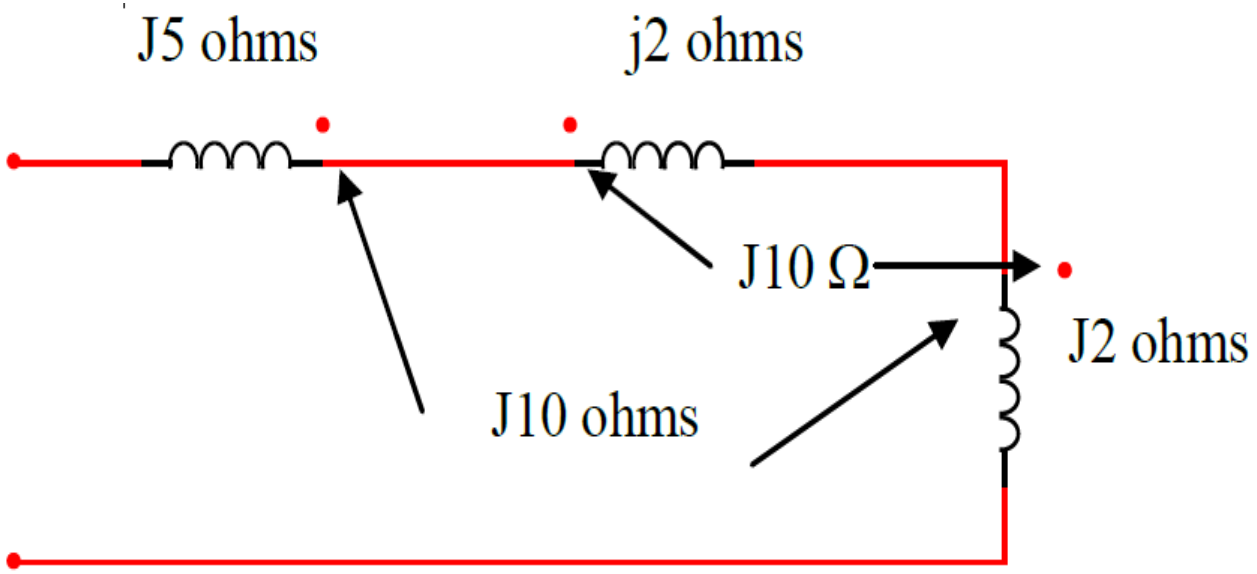
Problem No 5

- Find L_{AB}



Problem No 6

- Impedance Z as shown in fig is



Summary

- Understand and be able to use Self inductance
- Understand and be able to use Mutual inductance
- Understand and be able to use B-H curve