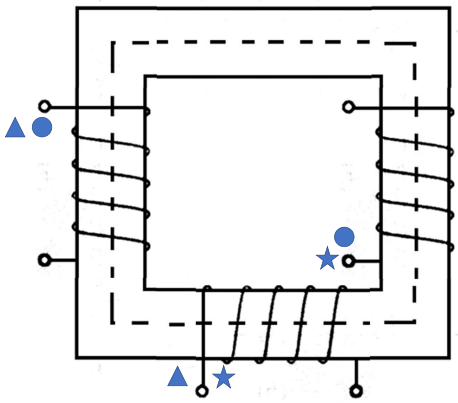
LAHORE UNIVERSITY OF MANAGEMENT SCIENCES
Department of Electrical Engineering

EE240 Circuits I
Quiz 03 - Section 1 - Solutions

Total Marks: 10
Time Duration: 15 minutes

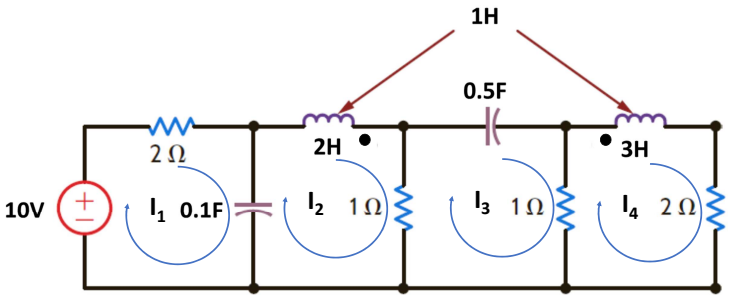
Question 1 (4 marks)

The figure below show windings marked on a magnetic flux-conducting core. Mark the dots on the windings to establish the mutual coupling.



Question 2 (6 marks)

Formulate the network equations for the following circuit using the Kirchhoff voltage law.



Loop 1:

$$2I_1 + 10\int I_1 dt - 10\int I_2 dt = 10$$

Loop 2:

$$I_2 + 10\int I_2 dt + 2\frac{d\,I_2}{dt} - \frac{dI_4}{dt} - 10\int I_1 dt = 0$$

Loop 3:

$$2I_3 + 2\int I_3 dt - I_2 - I_4 = 0$$

Loop 4:

$$3I_4 + 3\frac{d\,I_4}{dt} - \frac{dI_2}{dt} - I_3 = 0$$