

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES  
Department of Electrical Engineering

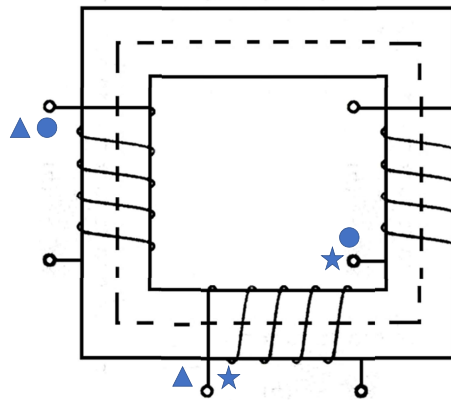
EE240 Circuits I  
Quiz 03 - Section 1 - Solutions

**Total Marks:** 10

**Time Duration:** 15 minutes

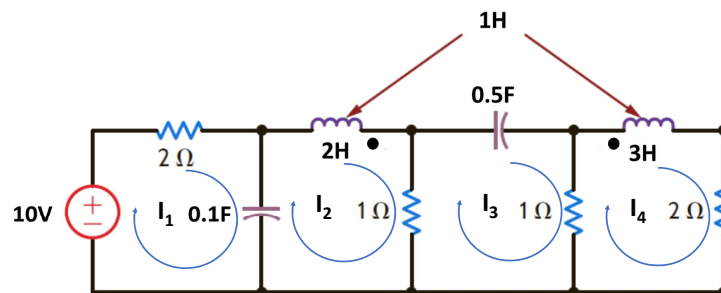
**Question 1** (4 marks)

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:**

$$I_2 + 10 \int I_2 dt + 2 \frac{dI_2}{dt} - \frac{dI_4}{dt} - 10 \int I_1 dt = 0$$

**Loop 3:**

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

**Loop 4:**

$$3I_4 + 3 \frac{dI_4}{dt} - \frac{dI_2}{dt} = 0$$