

ECE 320 & ECE 329

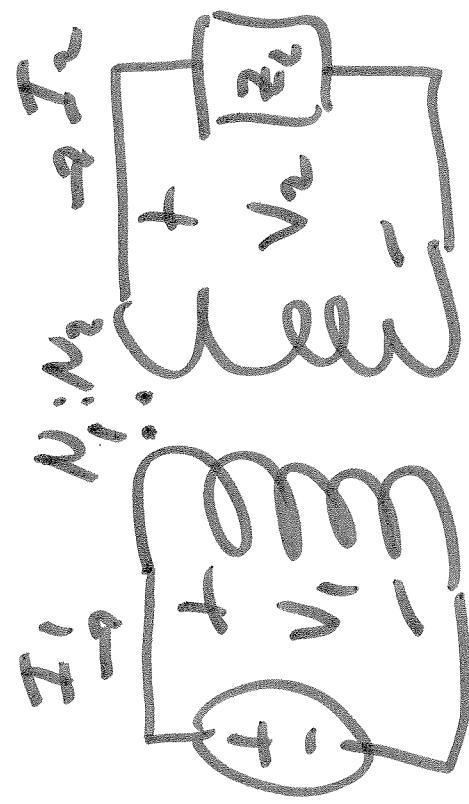
ENERGY SYSTEMS I  
BACKGROUND STUDY IN ENERGY SYSTEMS

SESSION no. 7

$$\text{Flux} = \mu \text{WBA}$$

Diagram illustrating the components of flux:

- Area:** Indicated by a vertical arrow pointing upwards from the base of the triangle.
- Flux:** Indicated by a vertical arrow pointing upwards from the top of the triangle.
- face turn:** Indicated by a vertical arrow pointing upwards from the left side of the triangle.
- W:** Indicated by a vertical arrow pointing upwards from the right side of the triangle.

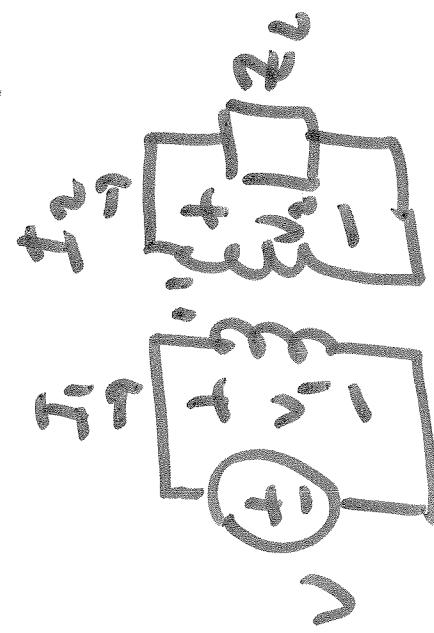
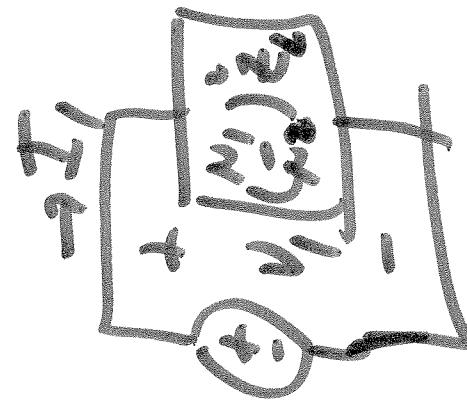


$$\frac{V_1}{N_1} = \frac{V_2}{N_2} \Rightarrow \frac{V_1}{V_2} = \frac{N_1}{N_2}$$

$$\frac{N_1}{N_2} \frac{I_1}{I_2} = \frac{V_1}{V_2} \frac{I_2}{I_1}$$

$$\frac{V_1}{I_1} = \left( \frac{\mu_1}{\mu_2} \right)^2 \frac{V_2}{I_2}$$

Reflected impedance

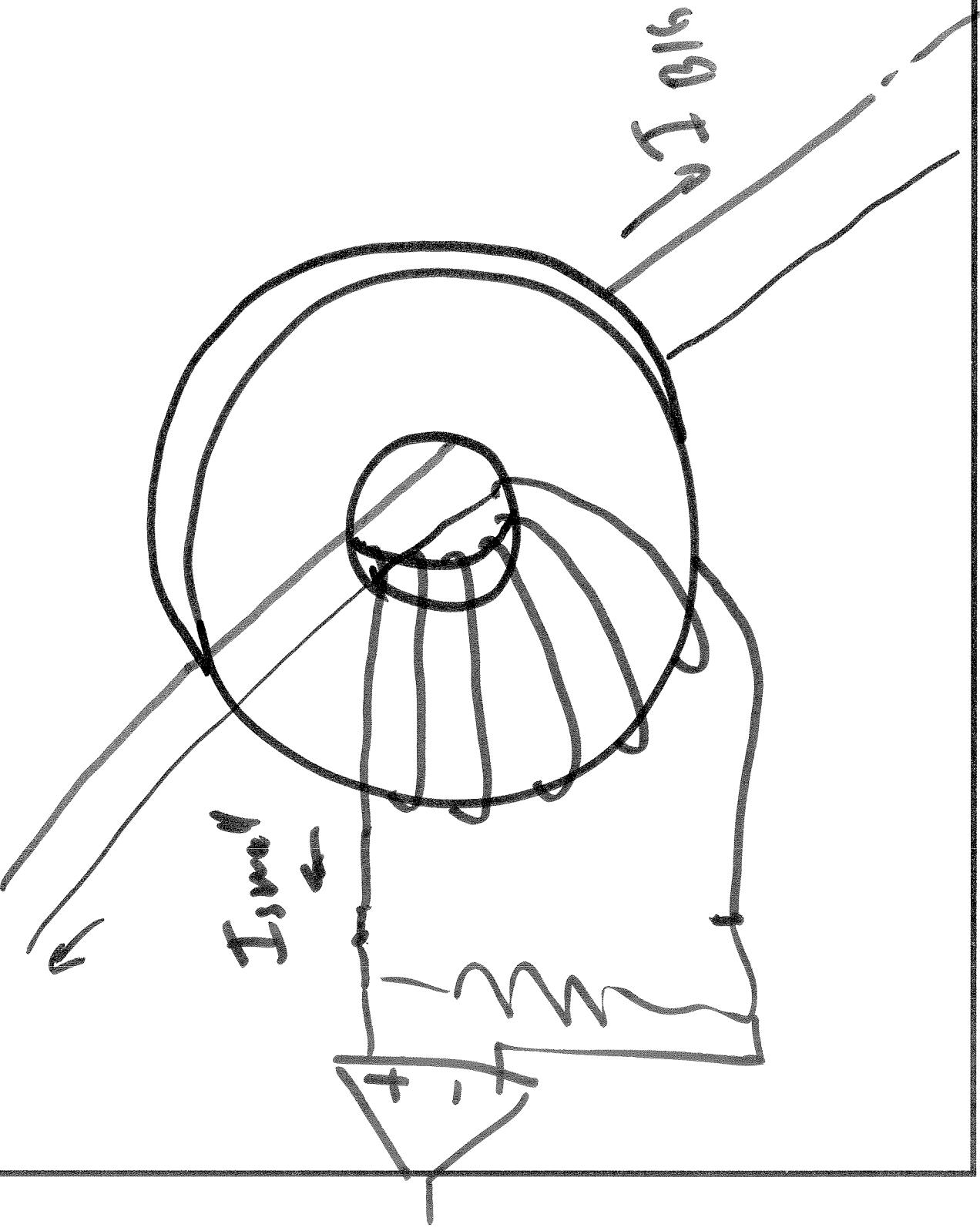


## Instrumentation & Measurement



- 1) Ratio. V
- 2) Bal. Solution

University of Idaho



ECE 320 / ECE 329

Energy Systems I

Lesson 7

Transformers

Core

Laminations

Bobbin

Insulating paper

Lacquer insulation

Oxide insulation

# Windings

Primary = input

Secondary = output

## Legs

Link the windings

E core, I core, toroidal core,  
pot core

Silicon steel, ferrite, powdered  
iron,

Ferrites and powdered iron are  
for higher frequency  
transformers