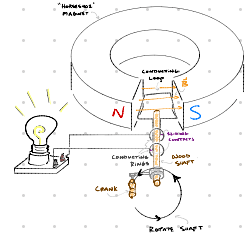


# LECTURE 21 SUMMARY:

## — GENERATORS:

- A MOTOR OPERATED IN REVERSE:



- MOTION  $\xrightarrow{\vec{B}}$  ELECTRICITY

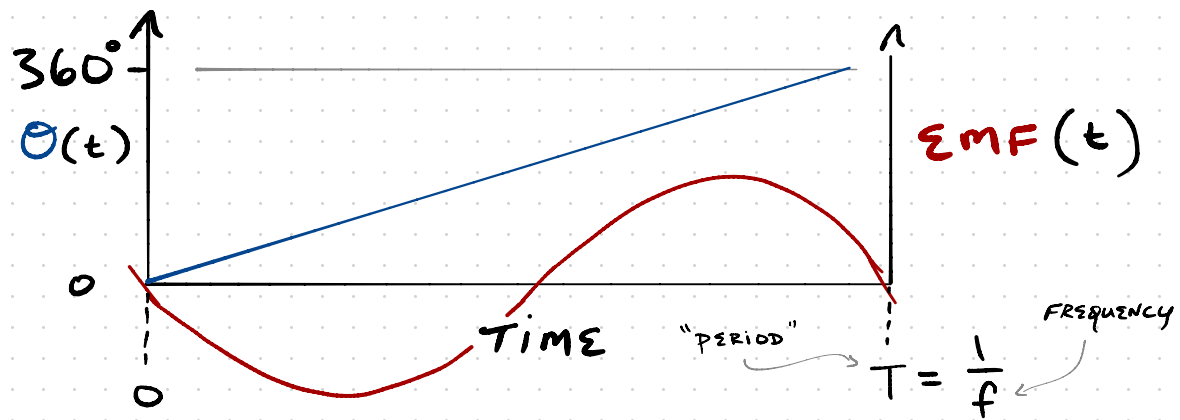
- FOR COIL ROTATING IN UNIFORM  $\vec{B}$  FIELD:

$$\text{EMF}(t) = 2\pi f N \underline{B} A \sin(2\pi f t)$$

$$\left[ \begin{array}{l} f: \text{FREQUENCY, } N: \text{\# TURNS,} \\ A: \text{LOOP AREA, } t: \text{time} \end{array} \right]$$

# — "ALTERNATING CURRENT"

- MANY GENERATORS PRODUCE AN "A.C. VOLTAGE", WHICH VARIES SINUSOIDALLY IN TIME:

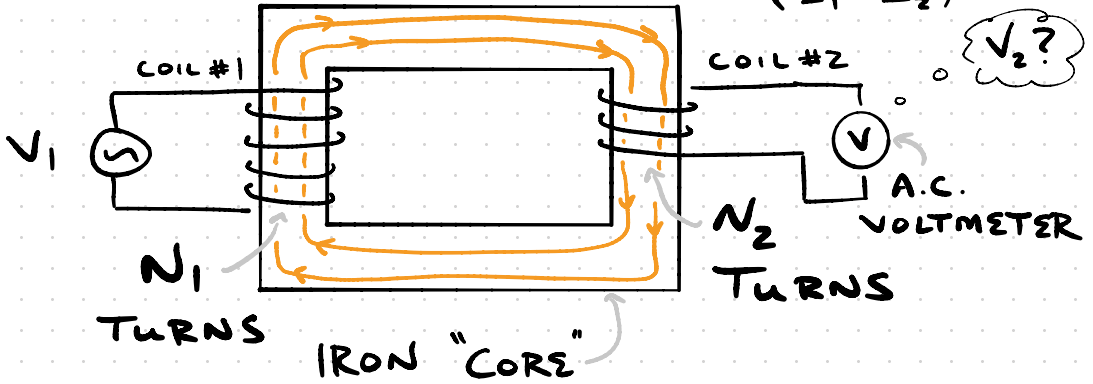


- E.G. LOOP ROTATING @ CONSTANT RATE IN  $\underline{B}$  FIELD.

$$\theta(t) = 2\pi f t$$

# — TRANSFORMERS

- MAGNETIC FLUX  $\Phi$   
SAME IN COIL #1 + COIL #2  
( $\Phi_1 = \Phi_2$ )



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

(FOR A.C. VOLTAGES)

- A.C. VOLTAGE CONVERTER