Quiz # 3
Electrical Machines
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Course: BETE-54-B

Data:

$r = 12.5$ cm

$l = 25$ cm

$C = 33$

$Slots = 33$

~~$\phi = 0.75T$~~

a:

Conductors : $Z = 2CN_c = 2(33)(7) = 462$

$$K_a = \frac{ZP}{2\pi a} = \frac{(462)(4)}{2\pi(4)} = 73.529$$

b:

$E_A = K'\phi\omega$

~~$= (45.4)(0.75)(33) = 381.15V$~~

$$\phi = \frac{B \times 2\pi r l}{P}$$

$$= \frac{0.75 \times 2\pi \times 12.5 \times 10^{-2} \times 25 \times 10^{-2}}{4} = 36.8 \times 10^{-3} Wb$$

$$E = (73.529)(36.8 \times 10^{-3})\left(2\pi\left(\frac{1000}{60}\right)\right)$$

$= 283.85$