

**EML2322L Quiz 2 (1/26/21)**

Please answer the following questions using **any** course materials (notes, hw, etc.) but do not work with others. If you mark a T/F question/statement FALSE, correct the underlined word to make it TRUE.

Name: \_\_\_\_\_

**Lab Period: T5-6 / T7-8 / T9-10**  
**(circle one) W2-3 / W4-5 / W7-8 / W9-10**  
**R2-3 / R4-5 / R7-8 / R9-10**

**Which of the following is correct about power produced by an electric motor:**

- A.  $P [Watts] = V [volts] \times I [amps] \times \eta$
- B.  $P [hp] = P [Watts] \times 0.001341 [hp/Watt]$
- C.  $1 hp = 750 Watts$
- D.  $1 hp = 550 [lb-ft/sec]$

**Given a 12V motor that draws 1.5A under full load, calculate the power in units of [lb-in/sec]:**

**Calculate how long [sec] it would take a 4.5RPM motor to rotate  $180^\circ$  using the 75% no-load speed rating approximation:**

**Calculate the max velocity [ft/sec] of a 3-wheeled, differentially steered robot with 80RPM drive wheel motors and 10" diameter wheels using the 75% no-load speed rating approximation:**

**Which of the following are important motor use tips to avoid damaging expensive motors:**

- A. Never overload with overturning moments larger than the motor's rated torque output
- B. Design motor mounting brackets to always use all the motor's mounting holes
- C. Be careful not to pull on the fragile motor wires or bend them tightly
- D. Always make sure motor mounting fasteners can screw in completely by hand before using a tool to apply the final tightening torque
- E. Always use motors in pairs