TI-RSLK MAX

Texas Instruments Robotics System Learning Kit

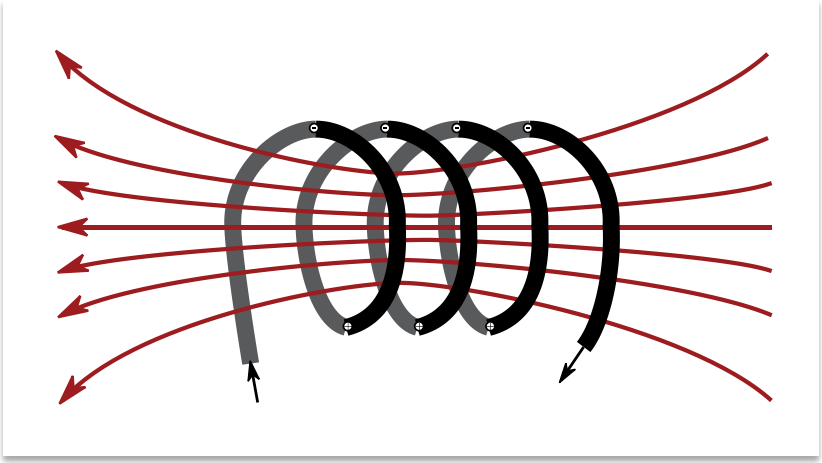
Texas Instruments

Module 12

Activity: DC motors

Activity: DC motors

Question 1
Consider a coil with 100 turns, of length 1 cm and current 0.1 A. What is the magnetic field strength in Telsa?



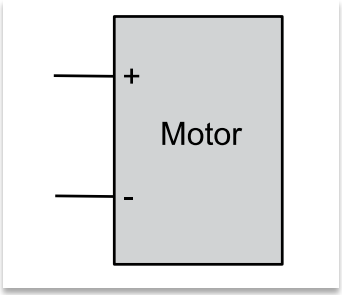
Question 2
In this module we use the motor to convert electrical energy to mechanical energy. However, can we use the motor to convert mechanical energy to electrical energy? How can we use this principle to design efficient braking systems?

Question 3
We have current (I) flowing through a wire (length L) and the wire is in a magnetic field (B). What is direction and magnitude of the resulting force on the wire?

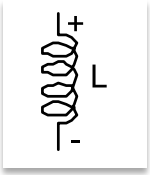
Question 4
Open up a DC motor and identify the permanent magnets, the stator, the rotor, the brushes and the commutators.

Question 5
A DC motor has a static resistance of 10 ohms. Explain how 10 V could be applied to the motor and 2 A of current flows.

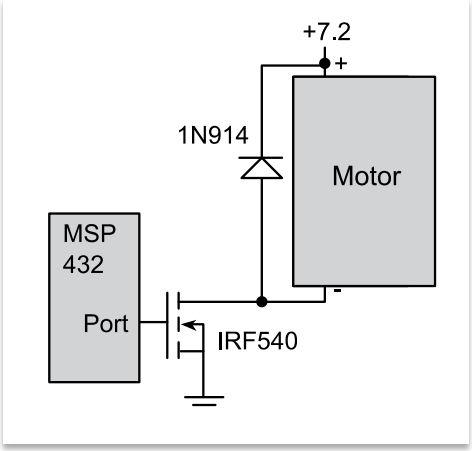
Question 6
A DC motor has a static resistance of 10 ohms. Explain how 10 V could be applied to the motor and no current flows?



Question 7
From what physical structure does the inductance of a DC motor arise?



Question 8
Why does this MOSFET circuit not work? In particular, the MOSFET will conduct very little current from drain to source and the motor will not spin very fast.



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