Solve the following problems:

1. Two identical charges, each -8.00 x 10^{-5} C, are separated by a distance of 25.0 cm. Find the electric force between them?

2. What is the electric force exerted on a test charge of 3.86 x 10^{-5} C if it is placed in an electric field of magnitude 1.75 x 10^{4} N/C?

3. Find the resistance of 134 m of No. 20 copper wire at 20° C (ρ = 1.72 x 10^{-6} Ω cm, A = 2.07 x 10^{-2} cm^{2}).

4. What is the cost to operate a 100 W lamp continuously for one week when the power utility rate is 20 cents/kWh?

5. A 1000 W microwave, a 40.0 W fluorescent light bulb, and a 550 W computer are plugged into a 120 V parallel circuit.

    a. What is the current passing through each appliance in the parallel circuit?

    b. Find the resistance of each appliance.

6. A magnetic field can deflect a beam of electrons, but it cannot work on the electrons to change their speed. Why?

7. Find the magnetic field at 0.500 m from a long wire carrying a current of 7.5 A.

8. An auto mechanic wants to use a solenoid she found on a car starter. If the solenoid is 0.150m in length and has 750 turns of wire, what amount of current is required to produce a magnetic field of 1.50 x 10^{-3} T at its centre?

9. Write a paragraph to describe how a generator functions to generate power. Use common electromagnetic physics terms, such as induction, coil, and current.

10. Write a paragraph to describe the differences and similarities between a motor and a generator.

Submission Requirements:

Submit your answers in a Microsoft Word document.

Evaluation Criteria:

The Exercise assignment rubric will be used to evaluate this assignment. In addition, your submission will be evaluated against the following points:

- Did you show all your work to solve the problem?

- Did you answer the question correctly?

- Did you attempt all the questions?

- Did you attach your Microsoft Word document with your work and answers before submitting?