Name:

Date:

SPH3U Chapter 12 Quiz (Quiz #6)

Knowledge /6	Thinking /5	Application /6	Communication /4

Multiple Choice: select the correct answer from the options. [6 marks]

1) Magnetic field lines travel _____ to _____ on the outside of a bar magnet.
a) south, north
b) north, south
c) north, north
d) south, south

2) A material that is made from a magnetized material and creates a magnetic field is called:
   a) an current carrying conductor
   b) a permanent magnet
   c) a temporary magnet
   d) a solenoid

3) The right hand rule for a STRAIGHT WIRE conductor states that:
   a) The thumb points in the direction of the conventional current, and the fingers curl in the direction of the magnetic field lines
   b) The thumb points in the direction of the flow of electrons, and fingers curl in the direction of the magnetic field lines

4) The magnetic field lines inside a solenoid:
   a) Point in all different directions
   b) Are parallel and point in the same direction
   c) Are less concentrated than the field lines outside the solenoid
   d) Are perpendicular to one another

5) The strength of an electromagnet can be increased by:
   a) Increasing the current through the wire
   b) increasing the number of loops in the solenoid
   c) Decreasing the diameter of the loops in the solenoid
   d) All of the above

6) When a current flows through two parallel wires in the SAME direction, the wires will
   a) Feel attracted to one another
   b) Repel each other
   c) Will neither attract or repel one another

7) The motor principle states that a force acts on a current carrying conductor in an external magnetic field. Explain what would happen to the armature of a brushed DC motor if the direction of current did not change every half turn. [2A]

8) What are two DISADVANTAGES of the DC motor? [2A]

9) A 0.600 m length of conducting wire carrying a current of 10.0 A is perpendicular to an external magnetic field of 0.200 T. Determine the magnitude of magnetic force on the wire. [2A]

10) Sketch the magnetic field lines for two bar magnets whose **north poles** are approaching one another. [2T]

11) An upward force of magnitude 5.00×10^{-3} N acts on a wire that is inside a uniform magnetic field of 3.45×10^{-3} T. The wire is perpendicular to the magnetic field and carries a current of 500.0 mA. How long is the wire? [3T]

12) What are the four fundamental components of a DC electric motor? Name them and briefly describe the purpose each one serves in the function of an electric motor. [4C]

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SPH3U Chapter 6 Quiz

Knowledge /9	Application /6	Thinking /4	Communication/4

1) How much work will you do if you push a full recycling bin along a sidewalk using a horizontal force of 175 N? [2K]

2) A 50.0 kg girl pedals a 15 kg bike at a speed of 2.60 m/s. What is the kinetic energy of the girl and the bike together? [2K]

3) A skier with a mass of 65.0 kg increases her speed from 1.75 m/s to 4.20 m/s as she skis down a hill. What is the increase in her kinetic energy? [3K]

4) Define the law of conservation of energy. [2K]

5) A forklift has an efficiency of 55% How much energy does it need to do 1600 J of work? [2A]

6) A blender is rated at 400W.

a) How much energy in joules does the blender use in 1.5 minutes? [2A]

b) The blender is 60% efficient. How much work does it do in 1.5 minutes? [2A]

7) A roller coaster train and its passengers have a combined mass of 1250 kg. The train comes over the top of the first hill 53.2 m above the ground with a speed of 1.17 m/s.

The train goes down the first hill and through a loop. **Ignoring friction,** calculate the speed of the train at the top of the loop, 21.3 m above the ground. [4T]

**Hint: Total mechanical energy (kinetic + potential energy) of the system is conserved!!!*

8) Name four energy resources used to generate electricity. [4C]

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SPH3U Chapter 9 Quiz

Knowledge /9	Thinking /4	Application /8	Communication /4

1) What is the difference between a transverse wave and a longitudinal wave? [2K]

2) A longitudinal wave consists of _____ and _____. (fill in the blank) [2K]

3) What do waves transport? [1K]

4) Draw a schematic of a transverse wave and label the amplitude, the wavelength, the crests, and the troughs. [4K]

5) Every 6.0 s a wave front reaches shore. What is the frequency of the wave? [2A]

6) A radio station broadcasts radio signals with a frequency of 102.5 MHz. If the radio waves travel at a speed of 3.00×10^8 m/s, what is their wavelength? [3A]

7) The distance of successive crests in a series of water waves is 9.0 m. The crests travel 5.0 m in 9.0 s. What is the frequency of the waves? [3A]

8) Draw a situation where two wave pulses are approaching one another on a spring. Both of the wave pulses are crests. Draw a second schematic that demonstrates what the resultant wave pulse will look like when he two wave pulses interfere with one another. [4T]

9) Define node, antinode and standing wave. [4C]

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SPH3U Chapter 11 Quiz (Quiz #5)

Knowledge /6	Thinking /5	Application /6	Communication /4

Knowledge

Multiple choice: Circle the correct choice [6 marks]

1) The law of electric charges describes how:
   a) Like charges attract
   b) Unlike charges repel
   c) Like charges repel
   d) Some materials are conductor and insulators

2) An ammeter measures:
   a) potential difference
   b) current
   c) resistance
   d) amps

3) Which of the following is considered a load in a circuit?
   a) Switch
   b) Battery
   c) Wires
   d) Lamp

4) Which of the following is NOT required for a circuit to function?
   a) Electrical source
   b) Switch
   c) Electrical wires
   d) Electrical load

5) If a 100 ohm resistor is connected to a 10 V source, the current through the resistor will be:
   a) 10 A
   b) 0.10 A
   c) 100 A
   d) 1000 A

6) Which of the following statements describes the current in a series circuit?
   a) The same at every point
   b) Largest next to the positive terminal
   c) Largest through the load
   d) Largest next to the negative terminal.

7) Draw a circuit with a **three cell battery** connected to **three light bulbs**. The first bulb is connected **in series** with the circuit and is controlled by a **switch**. The **second and third bulb** are connected **in parallel**. [4A]

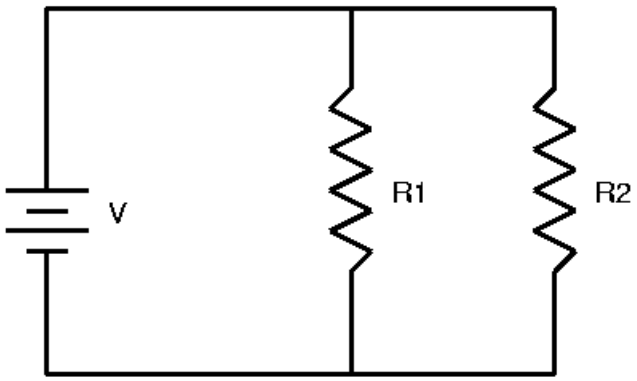
8) On the diagram above, attach a **voltmeter on the first bulb**, and an **ammeter to the second bulb**. [2A]

9) Calculate the **total resistance**, and the **potential difference and current for each resistor** in the diagram below. Show all work for full marks.[5T]

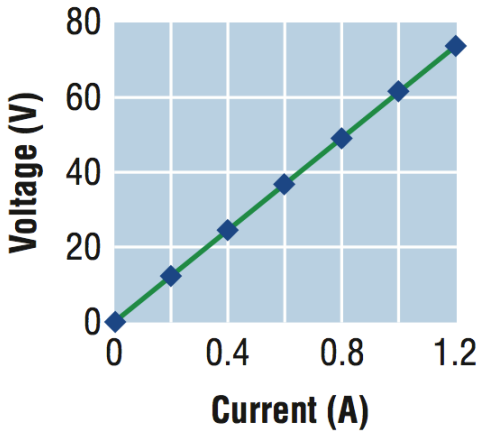
V_T = 6.0 V

R_1 = 25 Ω

R_2 = 40 Ω



10) Explain how you could calculate the resistance of the load given in the following graph. What relationship is the graph demonstrating?[2C]



11) Calculate the resistance of the load in the above graph. Show your work. [2C]