Due Date: March 22

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Grade 10 Physics
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Week of March 14 Homework

Read the sections on the syllabus for the week before attempting the problems. The problems are due on Tuesday, March 22. **No late submissions are accepted**.

Question 1. Write down an explanation for the following concepts.

1) What is current? What is the SI unit of current and its standard definition?
2) How is current different from other physical quantities?
3) What are some sources of potential difference? Explain the Seebeck Effect.
4) If two different wires having identical cross-sectional areas carry the same current, will the drift velocity be higher or lower in the better conductor?(Hint: Would a better conductor have a higher or lower electron density?)
5) Why is a voltmeter connected in parallel while an ammeter is connected in series?

Question 2. Find an expression for the effective capacitance of **n** equal-resistance resistors connected in parallel(Hint: refer to the problem in the 10B class work posted on Telegram).

Question 3. During open-heart surgery, a defibrillator can be used to bring a patient out of cardiac arrest. The resistance of the path is 900Ω and a 50.0mA current is needed. What voltage should be applied?

Question 4. In a conducting wire, if we increase the radius by a factor of three, by what factor should we increase the length so that we keep the resistance the same?

Question 5. A resistor made of Nichrome wire is used in an application where its resistance cannot change more than 5 percent from its value at 20.0^{o}C . Over what temperature range can it be used?)(The temperature coefficient of resistance of Nichrome (α) is 0.00017 per degree Celsius.

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