Name:	Major: ☐ ELEC ☐ CSEN

ECEG 201 – Homework 02

Due on 2020-01-24

1. Perform the following calculations and write your answers in engineering format using symbols for the correct SI prefixes and units. Don't use a compound unit (i.e. $\frac{\mathrm{V}}{\Omega}$) when there is an existing equivalent unit (i.e. A). Keep the appropriate number of significant digits in your answers. You do not need to show your work.

   (a) $(-3.14 \times 10^{-1}\,\mathrm{W}) + (3.14 \times 10^{1}\,\mathrm{W})$

   (b) $(-3.14 \times 10^{-5}\,\mathrm{V}) \times (-3.14 \times 10^{4}\,\mathrm{A})$

   (c) $(28.4 \times 10^{-5}\,\mathrm{J})/(1.03 \times 10^{2}\,\mathrm{N})$

   (d) $(3.14 \times 10^{-4}\,\mathrm{J})/(3.14 \times 10^{-3}\,\mathrm{s}) \times (3.14 \times 10^{2})$

   (e) $(-3.14 \times 10^{-4}\,\mathrm{W}) - (3.14 \times 10^{-3}\,\mathrm{W}) + (3.14 \times 10^{-2}\,\mathrm{W})$

   (f) $(36.4 \times 10^{-3}\,\mathrm{W})/(1.05 \times 10^{-2}\,\mathrm{V})$

   (g) $(28.4 \times 10^{-5}\,\mathrm{A}) \times (-1.05 \times 10^{2}\,\mathrm{V})$

   (h) $(-3.14 \times 10^{-4}\,\mathrm{A}) - (3.14 \times 10^{-3}\,\mathrm{A})$

   (i) $(3.14 \times 10^{-4}\,\mathrm{N}) \times (3.14 \times 10^{-3}\,\mathrm{m})/(3.14 \times 10^{-2}\,\mathrm{s})$

   (j) $(36.2 \times 10^{3}\,\mathrm{J})/(-1.03 \times 10^{-2}\,\mathrm{m})$

2. Convert these values to the specified units. Use the correct symbols for the specified SI prefix and unit. The number part of your answer may be greater than 999 or less than 0.1. Do not round your answers. Do not use exponential notation.

   (a) $1.5\,\mathrm{kW}$ to milliwatts

   (b) $0.454\,\mathrm{kg}$ to grams

   (c) $25\,\mu\mathrm{A}$ to amperes

   (d) $31.4\,\mathrm{kHz}$ to hertz

   (e) $1200\,\mathrm{MW}$ to gigawatts

   (f) $15\,\mu\mathrm{m}$ to millimeters

   (g) $31.4\,\mathrm{kHz}$ to megahertz

   (h) $0.0454\,\mathrm{mg}$ to micrograms

   (i) $1200 \times 10^{4}\,\mathrm{W}$ to megawatts

   (j) $31.4 \times 10^{2}\,\Omega$ to megohms

3. Write these values in engineering format using symbols for the proper SI prefix and unit. Do not round your answers.

   (a) four hundred and twenty seven kilometers

   (b) one-sixteenth of a watt

   (c) one and three-quarters micrometers

   (d) fifteen thousand joules

   (e) one thousand, one hundred and eleven milliamperes

4. Write a complete sentence, in your own words, to explain the meaning of each of these terms.

   (a) Resolution

   (b) Accuracy

   (c) Precision

5. What is the **exact** difference, in bytes, between one **mebibyte** and one **megabyte**? (When asked for an exact answer, do not round.)