Tutorial Questions (for ET1005 PEEE I Chapter 1)

1. Express each of the following numbers in scientific notation:
   (a) 75000 (b) 1/500 (c) 0.0002 (d) 0.6 (e) 78×10^{-3}

2. Express each of the following numbers in regular decimal form:
   (a) 2.5×10^{-6} (b) 5.0×10^{2} (c) 3.9×10^{-1}

3. Calculate the following numbers and express each result in scientific notation.
   (a) $(5 \times 10^{3}) + (8.5 \times 10^{-1})$ (b) $(2.6 \times 10^{8}) - (1.3 \times 10^{7})$
   (c) $(5 \times 10^{3})(4 \times 10^{5})$ (d) $(2.2 \times 10^{-9})(7 \times 10^{-6})$
   (e) $(2.5 \times 10^{-6}) \div (5.0 \times 10^{-8})$ (f) $(4.2 \times 10^{8}) \div (2 \times 10^{-5})$

4. Express each of the following numbers in engineering notation:
   (a) 89000 (b) 2.35×10^{5} (c) 0.000345 (d) 4.82×10^{-4}

5. Calculate the following numbers and express each result in engineering notation:
   (a) $(2.5 \times 10^{-3}) + (4.6 \times 10^{-3})$ (b) $(1.25 \times 10^{6}) + (250 \times 10^{3})$
   (c) $(32 \times 10^{-3})(56 \times 10^{3})$ (d) $(5 \times 10^{3}) \div (25 \times 10^{-6})$

6. Express the following quantities using metric prefixes:
   (a) 31×10^{-3} A (b) 5.5×10^{3} V (c) 3.3×10^{6} Ω

7. Express the following quantities in engineering notation:
   (a) 5 μA (b) 43 mV (c) 10 MW

8. Perform the indicated conversions:
   (a) 5 mA to microamperes (b) 5000 kV to megavolts
   (c) 3200 μW to milliwatts

9. Perform the following operation and express the result in scientific notation.

$$\frac{(8.5 \times 10^{26})(7.4 \times 10^{-10})}{(3.6 \times 10^{-5})}$$

10. Evaluate the expression and express the result in engineering notation; and hence, with metric prefix.

$$\frac{(120V)^2}{50\Omega} + \frac{(230V)^2}{1k\Omega} + ((0.036kA)^2 \times 180\Omega) + [48V \times 72mA]$$

Answers

1. (a) 7.5×10^{4}
   (b) 2×10^{-3}
   (c) 2×10^{-4}
   (d) 6×10^{-1}
   (e) 7.8×10^{-2}

2. (a) 0.0000025
   (b) 500
   (c) 0.39

3. (a) 5.00085×10^{3}
   (b) 2.47×10^{8}
   (c) 2.0×10^{9}
   (d) 1.54×10^{-14}
   (e) 5×10^{1}
   (f) 2.1×10^{13}

4. (a) 89×10^{3}
   (b) 235×10^{3}
   (c) 345×10^{-6}
   (d) 482×10^{-6}

5. (a) 7.1×10^{-3}
   (b) 1.5×10^{6}
   (c) 1.792×10^{3}
   (d) 200×10^{6}

6. (a) 31 mA
   (b) 5.5 kV
   (c) 3.3 MΩ

7. (a) 5×10^{-6} A
   (b) 43×10^{-3} V
   (c) 10×10^{6} W

8. (a) 5000 μA
   (b) 5 MV
   (c) 3.2 mW

9. 1.747×10^{22}

10. 234 kW