Chapter Two Review 1

1) Perform the following conversions:

a) 0.000213 m =_____nm

b) 1.2×10^5 Mm = _____m

c) 32 mm = _____Mm

d) 1,560 μm =_____nm

e) 15 mm = _____km

2) List the number of significant figures for each measurement:

a) 5.40 g _____

b) 10,350 ml _____

c) 1.90 cg _____

d) 0.0000040 mm _____

e) 200.0 cm _____

f) 1×10^3 km _____

3) Perform the following operations and round to the appropriate number of significant figures:

a) 4.5 g + 3.64 g = _____

b) 30 N x 1.73 s = _____

c) 88 *ml* – 19.48 *ml* = _____

d) 56.01 kg x 0.006 m/s = _____

e) 9.81 m/s divided by 0.0005 m/s = _____

f) 76.3 g + 5.54 g + 0.4 g = _____

4) List the A) uncertainty of each measurement and its percentage of uncertainty, and B) the absolute and relative Error of each measurement:

a) $r = 1.482 \times 10^{11}$ m (the accepted value is 1.510×10^{11} m)

b) $r = 6.41 \times 10^6$ m (the accepted value is 6.38×10^6 m)

5) Perform the following operations and give the uncertainty of each operation and its percentage of operational uncertainty: use cal. π

a) Volume of the earth if its radius is 6.38×10^6 m? ($V = 4/3\pi r^3$)

b) Area of a circular track if its radius is 76 m? ($A = \pi r^2$)

c) Volume of a crate that is 1.85 m by 0.52 m x 0.31 m?

6) List the following measurements in Scientific Notation:

a) 95,500,000 miles _____ d) 96.81 m/s _____

b) 0.000034 m _____ e) 100 *ml* _____

c) 1.01 mm _____ f) 1.063 km _____

7) List the following measurements in scientific notation:

a) 6,000,000 m _____ d) 0.981 m/s _____

b) 0.00021 m _____ e) 20 *ml* _____

c) 0.09 mm _____ f) 16.3 km _____

8) Problems:

a) Three young up-and-coming physics students measure a certain event to last 1.54 s, 1.47 s, and 1.50 s. Perform error analysis to find the absolute and relative error if the accepted value is 1.51 s.