Phys11 Prefixes/Conversions : W.S.-110

Answer the questions below using the S.I. prefixes are given below.

Prefix	Multiple	Symbol
exa	10^{18}	E
peta	10^{15}	P
tera	10^{12}	T
giga	10^{9}	G
mega	10^{6}	M
kilo	10^{3}	k
hecto	10^{2}	h
deca	10^{1}	da
deci	10^{-1}	d
centi	10^{-2}	c
milli	10^{-3}	m
micro	10^{-6}	µ
nano	10^{-9}	n
pico	10^{-12}	p
femto	10^{-15}	f

1) a) 45 centimeters = _____ mm = _____ µm
b) 25 grams = _____ mg = _____ kg
c) 0.012 liters = _____ mL = _____ kL
d) 4.5×10^{5} kilometers = _____ m =_____ nm
e) 150 picometers = _____ µm = _____ Mm
f) 16 microliters = _____ cL = _____ kL
g) 2.5×10^{-3} nanograms = _____ mg = _____ tg
h) 37 gigameters = _____ km = _____ pm

2) a) 46m = _____ cm = _____ km
b) 23mm = _____ nm = _____ pm
c) 4.0×10^{5} kg = _____ Mg = _____ Gg
d). 1.0×10^{4} L =_____ kL = _____ µL
e) 57 µg = _____ ng = _____ Tg
f) 18 km = _____ µm = _____ Gm
g) 1.0×10^{-5} Tg _____ kg= _____ mg
h) 36 cm = _____ pm=_____ Mm

3) Give the mass of the following volumes of water :
a) 25 cm^3, b) 24 L, c) 3.0×10^{-5} m^3, d) 6.4 mL, e) 5.2 kL, f) 7.1 µL.

4) Give the volume in cubic centimeters of the following masses of water.
a) 67 g, b) 14 kg, c) 28 ng, d) 1.4×10^{-3} Gg, e) 62 µg.

5) a) How many 250 mL beakers could be filled from a rectangular tank of water if the tank dimensions are 45 cm x 65 cm x 30. cm ?
b) Find the mass in grams.

6) If each tablet contains 750 µg (2 sig figs) of a drug how many grams of drug are in a case which contains 50,000 tablets (infinite number of sig figs)

7) If 18g of water contain 6.0×10^{23} molecules, how many molecules of water are there in a swimming pool measuring 24m by 50.0 m if the average depth is 2.0m.

Answers : 1)a) 450, 450,000, b) 25,000, 0.025, c) 12, 0.000012, d) 4.5×10^{8}, 4.5×10^{17}, e) 1.5×10^{-4}, 1.5×10^{-16}, f) 0.0016, 1.6×10^{-8}, g) 2.5×10^{-9}, 2.5×10^{-24}, h) 3.7×10^{7}, 3.7×10^{22}, 2)a) 4600, 0.046, b) 2.3×10^{7}, 2.3×10^{10}, c) 4.0×10^{2}, 0.40, d) 10., 1.0×10^{10}, e) 5.7×10^{4}, 5.7×10^{-17}, f) 1.8×10^{10}, 1.8×10^{-5}, g) 1.0×10^{4}, 1.0×10^{10}, h) 3.6×10^{11}, 3.6×10^{-7}, 3)a) 25 g, b) 24 kg, c) 30 g, d) 6.4 g, e) 5.2×10^{3} kg, f) 7.1×10^{-3} g, 4)a) 67 cm^3, b) 1.4×10^{4} cm^3, c) 2.8×10^{-8} cm^3, d) 1.4×10^{6} cm^3, e) 6.2×10^{-5} cm^3, 5)a) 350 (2 s.f.), b) 88000 (2 s.f.), 6) 38 (2 s.f.), 7) 8.0×10^{31}.