

Name: _____

date: _____ period: _____

Ch. 1, 2, 25 measurement; atom / molecules; organic / biochem test 55 points

ap chemistry

In problems involving any calculation, show your work in an organized manner, include (i) any relevant equation (or formula), (ii) conversion factor(s), (iii) put the proper units in your calculations and answer, and (iv) proper number of significant figures in your answer.

1. Solve. [15 points]

a. 285 ng = ___ μ g

$$\begin{array}{l} 49-1 \\ 1 \end{array} \left\{ \begin{array}{l} 285 \text{ ng} \\ \frac{1 \mu\text{g}}{10^3 \text{ ng}} \end{array} \right. = 285 \cdot 10^{-3} \mu\text{g}$$

b. $\frac{25 \text{ cm}}{\text{second}} = \frac{\text{km}}{\text{hour}}$

$$\frac{25 \text{ cm}}{\text{sec}} \left(\frac{60 \text{ sec}}{\text{min}} \cdot \frac{60 \text{ min}}{\text{hr}} \right) \left(\frac{\text{m}}{100 \text{ cm}} \cdot \frac{\text{km}}{10^3 \text{ m}} \right) = 0.90 \frac{\text{km}}{\text{hour}}$$

c. 1255 $\text{cm}^2 = \text{___ km}^2$

$$1255 \text{ cm}^2 \left(\frac{\text{m}}{10^2 \text{ cm}} \right)^2 \left(\frac{\text{km}}{10^3 \text{ m}} \right)^2 = 1255 \cdot 10^{-10} \text{ or } 1.255 \cdot 10^{-7} \text{ km}^2$$

2. Fill-in the below table; hypothetical compound ? [10 points]

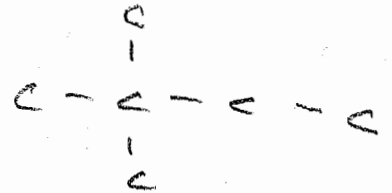
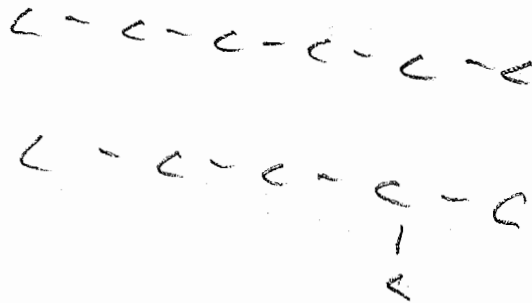
Chemical formula	Chemical name
N_3O_7	trinitrogen heptoxide
$\text{Cu}(\text{OH})_2$	Copper(II) hydroxide
$\text{Zn}(\text{C}_2\text{H}_3\text{O}_2)_2$	Zinc acetate
$\text{Si}_4\text{Br}_{10}$	Tetrasilicon decabromide
NaHCO_3	Sodium bicarbonate

3. Fill-in the below table; hypothetical isotopes ? [15 points]

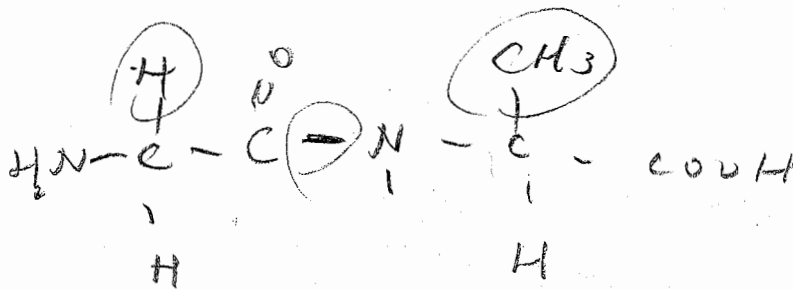
symbol	# protons	# neutrons	# electrons	charge	Atomic mass
^{44}Ca	20	24	20	0	44
^{97}Mo	42	55	42	0	97
$^{134}\text{Cs}^+$	55	79	54	+1	134

4. Sketch three structural isomers of hexane. [6 points]

Various
ex



5. Sketch / label the peptide bond in a dipeptide, where the side chain in the amino terminal is hydrogen, while the carboxyl terminal has a methyl group. [9 points]



3 pt @