

Chemistry CP Mid-Year Final Exam Study Guide

Chapters 1 - 7 & 22 review material

(This is just a **guide** on the topics to help you study! Be sure to review through all of your notes!)

A – Define the following:

- 1 – intensive physical property
- 2 – extensive physical property
- 5 – accuracy
- 6 – precision
- 7 – direct relationship
- 8 – inverse relationship

B – What branch of chemistry studies:

- 1 – compounds found in living things
- 2 – most carbon compounds
- 3 – energy in matter

C – Identify each as a physical change or chemical change:

- 1 – drying of wet towels
- 2 – rusting of porch railing
- 3 – burning of logs

D – list the SI base unit for:

- 1 – mass
- 2 – temperature
- 3 – length

E – Which is bigger?

- 1 – nano or centi
- 2 – deka or deci
- 3 – kilo or pico

F – Change the following into or out of scientific notation:

- 1 – 6.0×10^4 cm
- 2 – 2800 m
- 3 – 8.70×10^{-2} kg
- 4 – 0.000510 mm

G – Convert using factor label method: (show all work)

- 1 – 32.0 mL to liters
- 2 – 1.3 m to cm
- 3 – 7.90 kg to grams

H – Tell what this scientist worked on (discovered)

- 1 – Dalton
- 2 – Thompson
- 3 – Rutherford

I – Give chemical symbol, number of protons, neutrons, and electrons in:

- 1 – bromine
- 2 – oxygen
- 3 – calcium

J – Define:

- 1 – mass number
- 2 – atomic number
- 3 – alpha particle
- 4 – positron
- 5 – molar mass

K – Calculate the following: (show all work)

- 1 – how many grams are in 2.30 moles of barium?
- 2 – how many atoms are in 18.7 grams of potassium?
- 3 – $^{235}_{92}\text{U} \rightarrow ^{231}_{90}\text{Th} + \underline{\hspace{2cm}}$
- 4 – how much of the 80.0 g of radioisotope with a half-life of 5 years is left after 15 years?

L – List the types of electromagnetic energy (in order)

- 1 – which have the longest wavelength
- 2 – which have the largest frequency
- 3 – which have the highest speed

M – Define:

- 1 – ground state
- 2 – continuous spectrum
- 3 – emission spectrum

N – List the 4 quantum numbers.

- 1 – give their symbol
- 2 – define each (what do they indicate)
- 3 – give their number range

O – How many electrons are in:

- 1 – 2nd energy level
- 2 – 3rd energy level
- 3 – s sublevel
- 4 – d sublevel
- 5 – any orbital

P – Write the notation for:

- 1 – electron configuration for neon
- 2 – noble gas configuration for strontium
- 3 – orbital notation for iron
- 4 – valence configuration for calcium
- 5 – valence configuration for silicon

Q – Will the trend increase, decrease, or stay the same for:

- 1 – ionization energy across a period
- 2 – atomic radii down a group
- 3 – shielding effect across a period
- 4 – electronegativity down a group

R – Define:

- 1 – metallic bonds
- 2 – intermolecular forces – and list types
- 3 – hybridization
- 4 – lattice structure
- 5 – molecule
- 6 – formula unit

S – List the 3 bond types that form compounds

- 1 – what elements are in each
- 2 – how does it form (what happens with their valence electrons)

T – Draw the following electron dot diagrams

- 1 – HBr
- 2 – NaCl
- 3 – NH₃
- 4 – O₂

U – Define VSEPR.

- 1 – list name of each geometric structure and tell polarity of each

V – Name the following compounds:

- 1 – KBr
- 2 – Ca(OH)₂
- 3 – Al₃(PO₄)₃
- 4 – N₂F₄
- 5 – SO₃

W – Define the following:

- 1 – empirical formula
- 2 – anion
- 3 – salt

X – Solve the following: (show all work)

- 1 – how many moles in 56.0 g of zinc sulfate?
- 2 – how many formula units in 79 g iron (III) oxide?
- 3 – how many grams in 3.05 mol of silver nitrate?
- 4 – what is the percent composition of silicon disulfide?