

# SNC 2DI Exam Review 2011

## CHEMISTRY REVIEW

Periodic Table

Periods

Groups

Valence electrons

Metal/Non-metal/Metalloid

Ionic Compounds Properties

Ion, cation, anion

Ionic bonding

Molecular (Covalent) compounds

Properties

Sharing electrons

Number of atoms in a compound

Naming

Balancing Equations

Parts of a chemical reaction

Types of chemical reactions

Synthesis

Decomposition

Single Displacement

Double Displacement

Combustion (Hydrocarbons)

Neutralization

Acids and Bases

Properties of each

Examples of each

Litmus Paper

pH

- Explain the differences between the two types of bonding: ionic and covalent. Make sure to include differences in structure, bonding, types of atoms involved, and properties.
- Show bonding for:
  - $\text{CaCl}_2$
  - $\text{H}_2\text{O}$
  - $\text{Al}_2\text{P}_3$
  - $\text{NH}_3$
- Name the following compounds:
  - $\text{NaCl}$
  - $\text{Mg}_3(\text{PO}_4)_2$
  - $\text{P}_2\text{O}_5$
  - $\text{H}_2\text{SO}_4$
  - $\text{Cu}(\text{OH})_2$
- Give the chemical formula for the following names:
  - Calcium nitrate
  - Iron (III) chloride
  - Hydrofluoric acid
  - Sulphur trioxide
  - Gold (I) sulphate
- What is the different between chemical and physical change? How can we tell if a chemical change has occurred?
- Explain the Law of Conservation of Mass.
- What are the four different types of reactions studied? Give an example of each type.
- Indicate the type of reaction, give the products formed (if required) and balance the following reactions.
  - $\text{Mg}(\text{OH})_2 \rightarrow \text{MgO} + \text{H}_2\text{O}$  type: \_\_\_\_\_
  - $\text{Cl}_2 + \text{NaBr} \rightarrow \text{Br}_2 + \text{NaCl}$  type: \_\_\_\_\_
  - $\text{Cu}(\text{NO}_3)_2 + \text{CaF}_2 \rightarrow \text{_____} + \text{_____}$  type: \_\_\_\_\_
  - $\text{SrCl}_2 + \text{Na} \rightarrow \text{_____} + \text{_____}$  type: \_\_\_\_\_
  - $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$  type: \_\_\_\_\_
- What are the differences between acids and bases?

Property	ACIDS	BASES
Ion Present in Solution		
Reactivity with metals		
Electrical conductivity		
Taste		
Feel		
pH range		
Phenolphthalein		
Litmus paper		
Bromothymol blue		

- What is a neutralization reaction? Give a generalized equation and an example. What type of reaction is a neutralization reaction?
- Discuss the chemistry involved in acid rain.

## Physics: Optics – Formulas will be given

- amplitude (p. 382)
- bioluminescence (p. 392)
- chemiluminescence (p. 395)
- crest (p. 382)
- diffuse reflection (p. 406)
- electroluminescence (p. 397)
- electromagnetic radiation (p. 385)
- electromagnetic spectrum (p. 385)
- fluorescent (p. 394)
- frequency (p. 382)
- gamma rays (p. 385)
- incandescent (p. 394)
- infrared waves (p. 384)
- angle of incidence (p. 417)
- angle of reflection (p. 417)
- axis of symmetry (p. 450)
- concave lens (p. 451)
- concave mirror (p. 421)
- converging lens (p. 452)
- converging mirror (p. 421)
- convex lens (p. 452)
- convex mirror (p. 421)
- dispersion (p. 440)
- diverging lens (p. 451)
- diverging mirror (p. 426)
- focal length (p. 420)
- focal point (p. 420)
- blind spot (p. 472)
- colour blindness (p. 477)
- cone cells (p. 472)
- cornea (p. 470)
- geometric optics (p. 417)
- image (p. 418)
- incident ray (p. 418)
- index of refraction (p. 437)
- law of reflection (p. 418)
- lens (p. 450)
- magnification (p. 423)
- medium (p. 436)
- normal (p. 418)
- far-sighted (p. 473)
- iris (p. 470)
- near-sighted (p. 474)
- optic nerve (p. 472)
- optical fibre (p. 418)
- plane mirror (p. 419)
- real image (p. 420)
- refraction (p. 436)
- Snell's law (p. 441)
- total internal reflection (p. 442)
- vertex (p. 420)
- virtual image (p. 419)
- pupil (p. 470)
- retina (p. 471)
- rod cells (p. 472)

1. Several properties of light can be explained using the wave model.
2. White light can be separated into all the colours of the rainbow, with each colour having a different wavelength.
3. The electromagnetic spectrum is split into various parts, some with longer wavelengths than visible light and some shorter than visible light.
4. Light can be produced in many ways.
5. White light may be treated as a combination of three different primary colours that can be combined or separated.
6. The ray model describes how light interacts with matter.
7. Light can be absorbed, reflected, or refracted as it goes from one medium to another
8. The law of reflection states that the angle of incidence equals the angle of reflection as measured from the normal.
  - a. Labeling a diagram
9. Concave mirrors can be used for magnification. Magnification is the measure of how much larger or smaller an image is compared with the object itself.
  - a. Magnification equation
10. The speed of light is highest in a vacuum and lower in different media.
  - a. Index of refraction equation
11. Refraction is the bending of light as it crosses the boundary between two media.
  - a. Making sense of a diagram
12. Snell's law relates the angles of incidence and refraction of a light ray to the indices of refraction of the two media.
  - a. Calculations
  - b. Word problems
13. Total internal reflection occurs when light reflects completely off the wall within a denser medium rather than passing through into a less dense medium.
  - a. calculation
14. Images can be virtual or real depending on how they were reflected or refracted by mirrors or lenses.
  - a. Ray diagrams for mirrors / lenses
15. The thin lens equation relates the distance of the object from the lens, the distance of the image from the lens, and the focal length of the lens.
  - a. Labeling diagrams
  - b. Calculations
16. Human vision can be corrected using lenses
  - a. The eye diagram
  - b. Types of glasses

## BIOLOGY

anaphase (p. 32)	circulatory system (p. 70)	prophase (p. 31)
apoptosis (p. 33)	digestive system (p. 68)	red blood cells (p. 42)
cancer cell (p. 34)	esophagus (p. 58)	regeneration (p. 38)
cell (p. 10)	excretory system (p. 71)	ribosomes (p. 14)
cell cycle (p. 28)	heart (p. 57)	rough endoplasmic reticulum (p. 14)
cell membrane (p. 12)	homeostasis (p. 79)	sister chromatids (p. 29)
cell specialization (p. 40)	integumentary system (p. 68)	smooth endoplasmic reticulum (p. 14)
cell wall (p. 14)	cloning (p. 115)	stem cell (p. 40)
centriole (p. 16)	DNA screening (p. 108)	stomate (p. 44)
chloroplast (p. 15)	gene (p. 108)	stomach (p. 58)
chromosome (p. 28)	gene therapy (p. 114)	transpiration (p. 72)
concentration (p. 12)	immunization (p. 105)	telophase (p. 32)
cytokinesis (p. 32)	medical imaging (p. 93)	tissue (p. 42)
cytoplasm (p. 12)	public health strategies (p. 104)	vacuoles (p. 13)
cytoskeleton (p. 14)	transgenic organism (p. 116)	vesicles (p. 13)
differentiation (p. 40)	The anaphase	xylem (p. 45)
diffusion (p. 12)	stage in mitosis	interdependent (p. 80)
Golgi apparatus (p. 14)	X-rays are used to image	intestines (p. 58)
interphase (p. 28)	broken bones.	lung (p. 57)
lysosomes (p. 13)	Circulatory system	organ (p. 54)
meristematic tissue (p. 43)	mitochondria (p. 13)	organ system (p. 65)
mesophyll (p. 44)	mitosis (p. 28)	respiratory system (p. 69)
metaphase (p. 32)	nucleus (p. 12)	skin (p. 56)
absorption (p. 68)	organelle (p. 10)	
capillaries (p. 57)	phloem (p. 45)	

- Cells have special structures that enable them to perform important life functions. (1.1)
  - Labeling a diagram
- Scientists use technology like the microscope to understand more about the cell. (1.1)
- The life cycle of a cell has four stages. (1.2)
- Growth and repair of cells is accomplished by mitosis. (1.2)
- Cancer cells have abnormal rates of cell division. (1.2)
- Stem cells divide to form specialized cells. (1.3)
- Specialized cells group together to function as a tissue. (1.3)
- In animals, tissues combine to form organs. (2.1)
  - Labeling a diagram
- In plants, tissues combine to form flowers/fruits, leaves, stems, and roots. (2.1)
  - Labeling a diagram
- Organs associate together to form organ systems. (2.2)
- Each organ system may contain several organs. (2.2)
- Organ systems work together to accomplish movement, support, protection, transport, reproduction, digestion, gas exchange, and waste removal. (2.2)
- Organ systems are interdependent organized groups of tissues and organs. (2.2)
- Healthy organ systems work together to maintain homeostasis. (2.3)
- Medical personnel use technology to study, analyze, diagnose, and treat abnormalities in tissues, organs, and systems. (3.1)
- Medical imaging technologies provide information for diagnosis and treatment of problems in tissues, organs, and organ systems. (3.1)
- Public health agencies have developed strategies to improve the health and reduce health-care costs of Ontarians. (3.2)
- Examples of technological developments of systems biology include gene therapy, cloning, transgenic techniques, and reproductive technologies. (3.3)
- Developments in systems biology should be viewed in the context of social and ethical issues. (3.3)

## Climate Change

- albedo (p. 278)
  - atmosphere (p. 265)
  - biome (p. 268)
  - biosphere (p. 264)
  - climate (p. 262)
  - conduction (p. 279)
  - convection (p. 280)
  - Coriolis effect (p. 281)
  - greenhouse gases (p. 276)
  - hydrosphere (p. 267)
  - insolation (p. 276)
  - lithosphere (p. 266)
  - natural greenhouse effect (p. 276)
  - net radiation budget (p. 277)
  - radiation (p. 279)
  - solar radiation (p. 264)
  - thermal energy (p. 264)
  - weather (p. 262)
  - wind (p. 281)
  - anthropogenic greenhouse effect (p. 300)
  - carbon sink (p. 302)
  - carbon source (p. 301)
  - climate change (p. 303)
  - economic system (p. 322)
  - fossil fuels (p. 301)
  - global warming (p. 303)
  - global warming potential (p. 298)
  - persistence (p. 298)
  - positive feedback loop (p. 326)
  - runaway positive feedback loop (p. 327)
  - salinity (p. 314)
  - carbon footprint (p. 350)
  - carbon offsets (p. 353)
  - carbon tax (p. 354)
  - confidence level (p. 340)
  - emissions trading (p. 354)
  - Kyoto Protocol (p. 342)
  - mitigation (p. 350)
  - sequestered (p. 350)
  - sustainable development (p. 342)
1. Weather versus Climate
  2. Three Methods of heat transfer
  3. Stable temperature of the planet
  4. Low pressure, High Pressure, wind, ocean currents
  5. Gases of the atmosphere
  6. Layers of the Atmosphere
  7. Greenhouse effect vs global warming
  8. Evidence of Climate change
  9. Monitoring Climate change
  10. Models of climate change
  11. Negative and positive influences on climate change

Definitely review the questions on the sheet