Friday, May 31/13
Science 122

Announcements

**** Need an activity re a course topic before the end of <u>May</u>.**

Quiz - Electrochemistry - IS Monday (Lucas and Mike C)

1. Exam Review - Fluid Mechanics

2. Activities:
   Lucas - Linear Thermal Expansion ✓
   Mike N - Bernoulli - Flowing Fluids ✓
   Jennifer - Optics
   Mike C - Exam Jeopardy ✓ "A farce!" L.S.
   Safwaan - Magnetism

3. Worksheets (3) - Redox Tables, Predicting Entities and Predicting Redox Reactions

4. Redox Reactions and Titrations - 3 Lab Exercises

5. Using Redox Numbers to Balance Redox Reactions

6. Page 433, Exercise 46 (a-g)

Electro	Optics	Fluids	Nuclear	Thermal
~~100~~	~~100~~	~~100~~	~~100~~	~~100~~
~~200~~	~~200~~	~~200~~	~~200~~	~~200~~
~~300~~	~~300~~	~~300~~	~~300~~	~~300~~
~~400~~	~~400~~	~~400~~	~~400~~	~~400~~
~~500~~	~~500~~	~~500~~	~~500~~	~~500~~

Activity

Connection to Course Material -> 5

Pre-planning -> 5

Prepared on the Day -> 5

Participation -> 5

Exam: Outline - Fluid Mechanics

- fluid mechanics
- hydrostatics
    - mass density
    - specific gravity
    - pressure
    - hydrostatic pressure equation
    - gauge pressure
    - pressure gauges (open-tube manometer)
    - Pascal's Principle
    - Archimedes's Principle
        - buoyant force
        - hanging and submerged objects
        - apparent weight
- hydrodynamics
    - steady (streamline)/unsteady flow
    - compressible/incompressible flow
    - viscous/non-viscous flow
    - mass flow rate
    - continuity equation
    - volume flow rate
    - Bernoulli's Equation

Exam: Outline - Nuclear and Quantum Physics

- atom, nucleons (protons and neutrons) and electrons
- isotopes, nuclides, notation (mass number/atomic number)
- radioactive decay (alpha, beta, gamma)
- half-life, activity, decay constant
- electron-volt
- Planck: quantization of energy
- Einstein: photons and photoelectric effect (work function, cut-off frequency
- wave-particle duality, deBroglie wavelength
- Bohr: atomic structure, energy level diagrams

Exam: Outline - Thermodynamics

- thermodynamics
- thermal expansion
- Boyle's Law, Charles's Law, Combined Gas Law
- Ideal Gas Law
- Kinetic Theory of Gases (internal energy and kinetic energy)
- Laws of Thermodynamics (0th, 1st, 2nd, 3rd)
- thermal processes (isobaric, isochoric, isothermal, adiabatic)
- heat engines and efficiency
- Carnot's Principle and Engine

Exam: Outline - Optics

- Law of Reflection
- Snell's Law (Refraction)
- Plane Mirror: ray diagram and POST
- Spherical Mirrors:
    - concave (converging) and convex (diverging)
    - labelled ray diagrams and POST
    - mirror and magnification equations (sign conventions)
    - fun house mirrors
- Lenses:
    - index of refraction
    - convex (converging) and concave (diverging)
    - labelled ray diagrams and POST
    - lens and magnification equations (sign conventions)
    - double lens problems

Exam: Outline - Magnetism

- magnetism
- magnetic domains
- magnetic field lines (N -> S)
- RHR/LHR's #1, 2 and 3
- symbols: in and out of page
- parallel wires
- electric motor: decide direction of armature or I
- force acting on a straight wire
- force acting on a single charged particle
- radius of a single particle in a uniform magnetic field
- velocity selector (perpendicular B and E fields, v)
- mass spectrometer (q to m ratio)
- electromagnetic inductance
- Lenz's Law
- EMF
- Ohm's Law
- self-inductance and mutual inductance
- transformers (primary and secondary coils, turns ratio, power)