Lists for Final (not on Tests 1&2)

(updated at 5:35 pm, May 10)

Terms:

Magnetic domains, ferromagnets Hard vs. soft magnetic materials Capacitor Diode Transistor, MOSFET Analog vs. digital Binary vs. decimal Tank circuit Antennas (transmitting, receiving) Inductor Polarization AM: amplitude modulation FM: frequency modulation Phosphor Deflecting coils RGB: red, green, blue Microwave ovens (2.45 GHz) Polar molecules Standing-wave patterns (Chladni plates) Various kinds of electromagnetic radiation Index of refraction Rayleigh scattering Refraction Dispersion, rainbows Reflection Interference: constructive vs. destructive In-phase vs. out-of-phase Thin films, soap bubbles Polarized sunglasses Radiative transitions from [atomic electron] excited state to ground state Fluorescence LASERs and laser light Spontaneous vs. stimulated emission of radiation Coherent vs. incoherent radiation Converging vs. diverging lens Focal length

Aperture Telephoto vs. normal vs. wide-angle lens Perspective distortion Shutter speed, exposure Film speed Depth of focus vs. depth of field Binary representation of wave signal CD. DVD Diffraction Total internal reflection **Optical** fibers Nucleus: proton vs. neutron Strong interaction vs. electrostatic Radioactive decay Tunneling Heisenberg uncertainty principle Nuclear fission vs. fusion Induced fission, chain reaction Radioactive half-life Alpha, beta, gamma radiation Neutrino Critical mass, super/sub/critical mass X-rays: Bremsstrahlung vs. characteristic CAT: computer-assisted tomography MRI: magnetic resonance imaging PET: positron emission tomography

New units and constants:

Farad Henry Diopter Electron-volt Planck's constant *h* rad rem

Laws: (cf. Important Laws & Equations)

 $c = \lambda \cdot f$ (light speed = wavelength frequency) $E = h \cdot f$ (photon energy is Planck constant \cdot frequency) Lens equation, 1/f = 1/o + 1/i (qualitative)