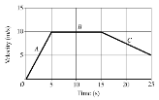
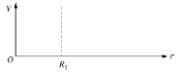
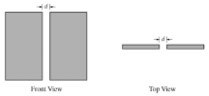
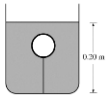
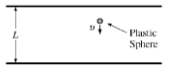
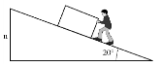
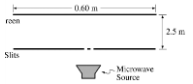
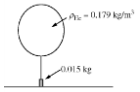
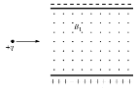
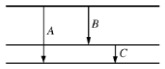
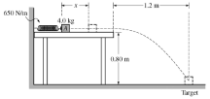
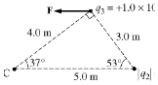
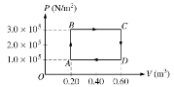
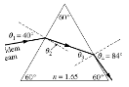
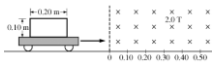
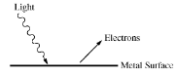
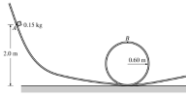
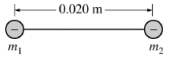
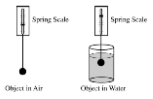
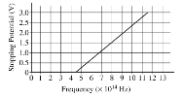
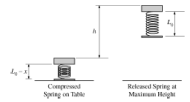
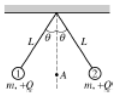
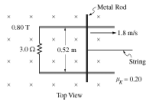
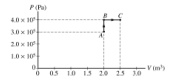
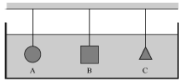
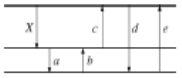
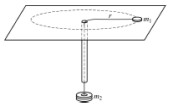
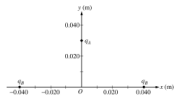
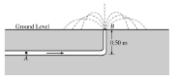
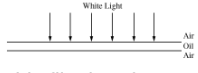
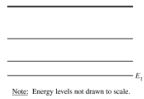
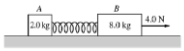
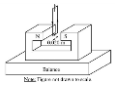
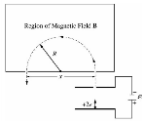
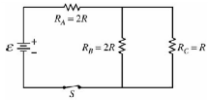
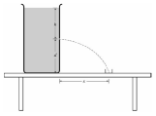
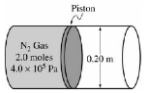
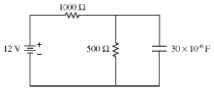
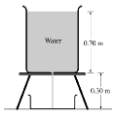
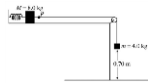
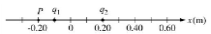
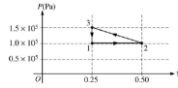
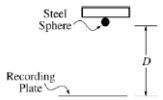
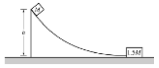
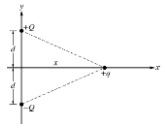
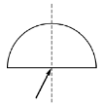
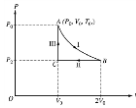
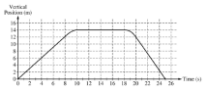
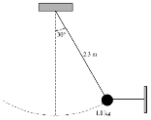
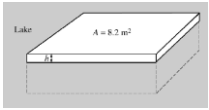
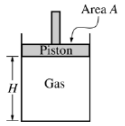
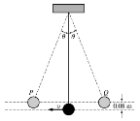
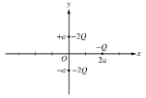
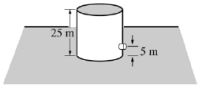
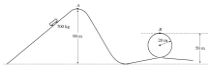
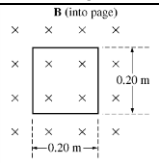
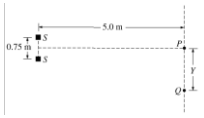
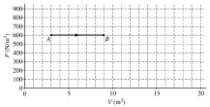
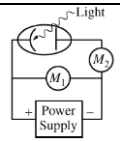
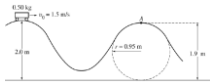
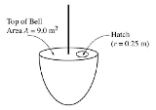
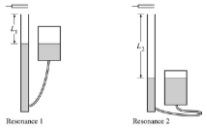
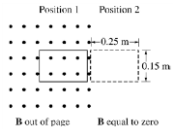
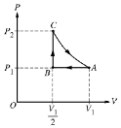
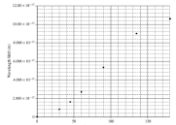
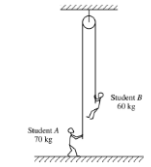
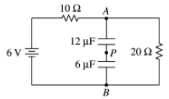
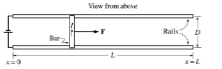
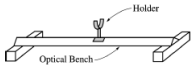
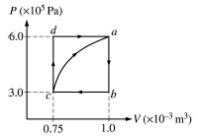
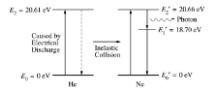
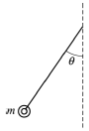
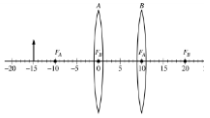
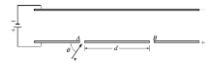
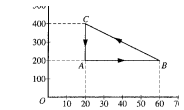
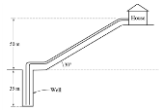
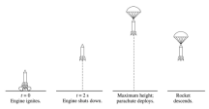
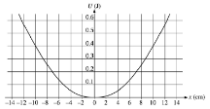
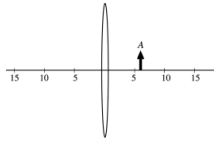
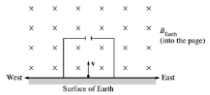
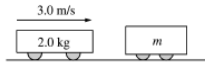
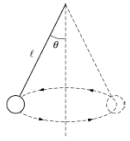
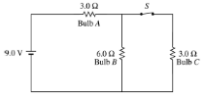
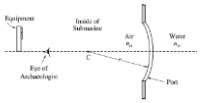
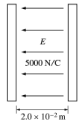
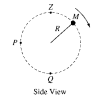
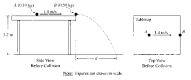
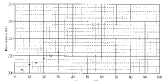
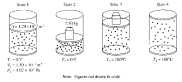
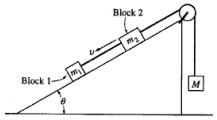
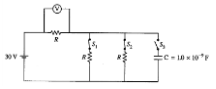
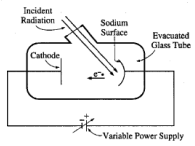
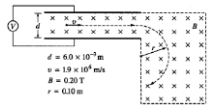
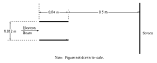
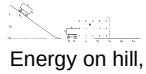
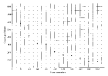
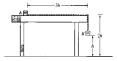
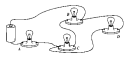
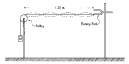
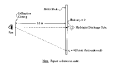
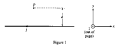
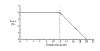
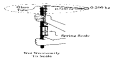
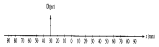
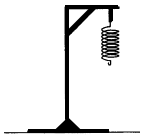
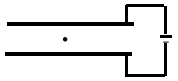
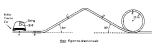
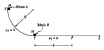
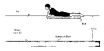
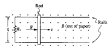
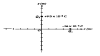
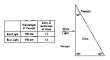
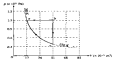
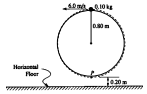
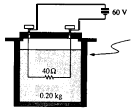
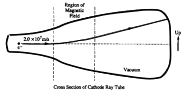
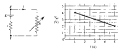
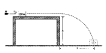
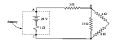
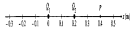
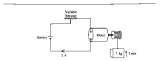
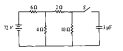
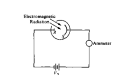
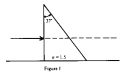
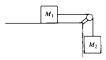
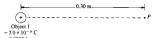
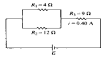
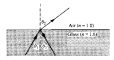
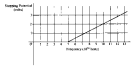
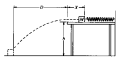
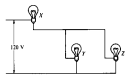
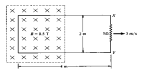
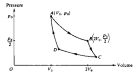
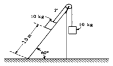
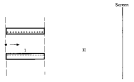
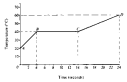
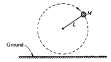
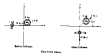
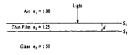
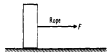
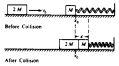
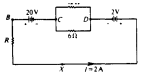
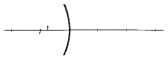
AP Physics B Free-Response Index

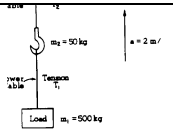
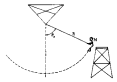
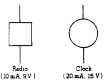
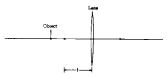
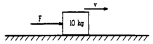
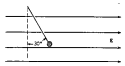
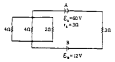
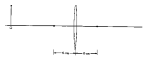
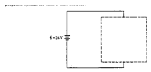
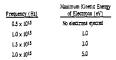
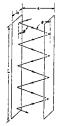
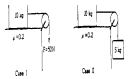
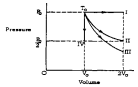
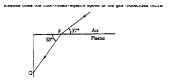
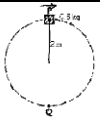
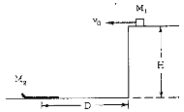
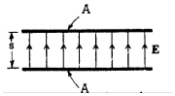
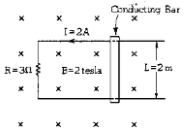
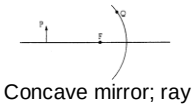
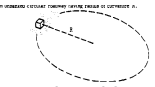
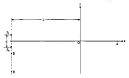
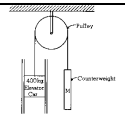
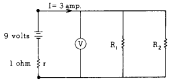
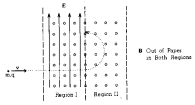
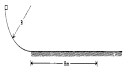
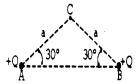
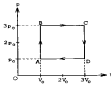
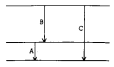
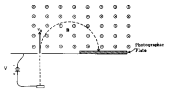
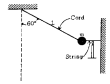
		B1	B2	B3	B4	B5	B6	B7	B8
2011	Rubric	 Kinematics - dynamics	 V and E graphs	 single slit interference LAB	 Buoyancy	 Variation on Millikan oil drop exp.	Energy level stuff		
2011b	Rubric	 Mechanics	E Field lab	 Double slit interference	 Buoyancy	 Mass spec	 Energy levels		
2010	Rubric	 Energy Cons. Proj.	 Buoyancy	 Electrostatics	 PV-diagram	 Prism Refraction	 EM-induction	 Photoelectric effect	
2010b	Rubric	 Energy Cons.	 Pendulum lab	 Electrostatics	 Circuits – B fields	 Double-slit experiment	 Buoyancy	 Photoelectric effect	
2009	Rubric	 LAB: Vertical spring	 electrostatics	 Motional emf	 PV-diagram	 buoyancy	 Double-slit interference	 Photoelectric effect, deBroglie, energy levels	
2009b	Rubric	 LAB: Horizontal Circle	 Electrostatics & mass spectrometer	 Bernoulli & projectiles	 Thermo w/ current electricity	 Thin film interference and refraction	 Energy levels		
2008	Rubric	 Collisions	 Springs & Energy	 LAB: Current balance	Fluids & projectiles	Thermo cycle	Mirror – ray diagrams	deBroglie wavelength; photoelectric effect	
2008b	Rubric	Momentum conservation	Mechanics; springs	LAB: magnetic field measurement	fluids	Lens – ray diagrams	Thermo cycle	Nuclear radiation	

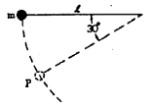
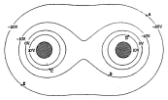
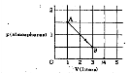
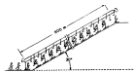
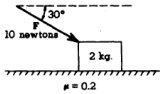
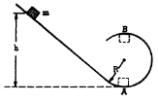
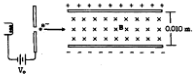
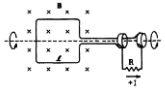
		B1	B2	B3	B4	B5	B6	B7	B8
2007	Rubric	 Dynamics; inclined plane	 Mass spectrometer	 Circuits; RC circuit	 Torricelli's theorem	 Thermo; isobaric process	LAB: determine the focal length of a lens	Positron-electron pair annihilation	
2007b	Rubric	 dynamics	 q moving thru a B field	 RC circuit	 Torricelli's theorem	 Thermo; isometric process	LAB: determine the index of refraction of a slab of glass	Pair production	
2006	Rubric	 Dynamics; modified Atwood's w/ spring	LAB: World class runner – 100 m dash	 Electrostatics; field and potential	Snell's Law; graphical derivation of n; Thin film interference	 Thermo; PV diagram	Energy of photon; wave properties of an electron		
2006b	Rubric	 LAB: graphical derivation of *g*	 Energy, momentum conservation; friction dynamics	 Electrostatics	 Reflection/refraction; Double slit interf.	 Thermo; PV diagram	deBroglie wavelength; Electron/positron annilihation		
2005	Rubric	 Kinematic, dynamics & graphs	 pendulum	 Electrostatics – point charges	 LAB: double slit interference	 buoyancy	 PV=nRT graph	Energy levels; Photoelectric effect	
2005b	Rubric	 Kinematics, dynamics, graphs	 pendulum	 Electrostatics – point charges	LAB: two source interference	 Fluid flow: Torricelli's theorem	 PV=nRT graph	Photons and Photoelectric effect	
2004	Rubric	 Energy conservation, rollercoaster, circles	Pressure and depth; Newton's laws	 Faraday's Law	 Two source interference	 PV-diagram, thermo	 LAB: Photoelectric effect		
2004b	Rubric	 Energy conservation, rollercoaster, circles	 Pressure and depth; Newton's laws	 LAB: Standing waves in tube	 Faraday's Law	 PV-diagram, thermo	 Compton scattering		

		B1	B2	B3	B4	B5	B6	B7	B8
2003	Rubric	 F = ma, accel, FN,	 R and C in circuit	 Rail Gun: FB, work-energy	 LAB: concave mirror image	 PV diagram, energy	Fluids: pressure-depth, gauge pressure, Archimedes's Princ.	 atomic energy diag., HeNe laser	
2003b	Rubric	 F = ma, kinematics	 LAB: circuit to power motor	 single & double lens	 E in capacitor, vector motion of electron,	 PV diagram, energy	 Bernoulli's princ., power, fluid flow	Atomic energy diagram, range of visible light	
2002	Rubric	 F=ma, impulse, kinematics	 U vs. x, energy, proj.motion,	Two light bulbs, rated in Watts, in series and parallel	 converging lens with virtual image then with real image	 B and E fields on proton	 LAB: spring and Archimedes' Principle	 photon-electron collision	
2002b	Rubric	 collision with impulse kinematics and energy	 conical pendulum, projectile motion	 light bulbs in series and parallel	 submarine window as mirror, lens	 capacitor E, V, C, electron released: find F, energy	Canister of gas: ncΔt, mcΔt, PV=nRT, ht. of fusion	LAB: deBroglie wavelengths, atomic energy diagrams	
2001	Rubric	 2001 - circular motion, projectile	 momentum, projectile	 electrical forces, fields, potential	 wavelength dependent refraction	 LAB - temp dependent resistor used as thermometer	 gas thermo - types of processes.	nuclear reaction, mass defect.	
2000	Rubric	 (2000) kinematics graph, projectile	 Incline, forces, friction.	 RC circuit. dielectric	 refraction, thin film.	 Photoelectric effect	LAB: determine specific heat of liquid.	 Elec, Mag field on particle. Mass spectrometer.	
1999	Rubric	 1999 – kinematics, work, en, friction	 CRT, electron projectile in E field. B field	 Energy on hill, induction	 radioactive decay, half life	 centripetal force on a turntable	Refraction and diffraction Lab experiments – design	Gas cycle, heat engine	

		B1	B2	B3	B4	B5	B6	B7	B8
1998	Rubric	 1998 – acceleration on table, projectiles	 force on charged particle in E field.	 LAB: Energy transfer by GPE. Specific heat	 142 – bulbs in circuit. Drawing, Ohms law.	 Standing waves on a string.	 ball swinging directions of V and a	 diff grating interference, Bohr level.	 146 B forces on wire and particle.
1997	Rubric	 1997 – F vs D – find work, etc.	 LAB: Centripetal force	 Spring, force on current in B field.	use resistors to heat water – draw circuit, do calculations	 convex lens, concave mirror, draw and calculate	A – discuss experiment, pick from 3.	 energy levels	
1996	Rubric	 1996 - elastic and inelastic collision on air track	 LAB: Hooke's law	 Double slit interference	Hook up specific circuit. Ohm's law	alpha decay, energies, momentum	 Millikan experiment	gas in a can, moles	
1995	Rubric	 1995 – air track, inelastic collision, energy in spring	 toaster circuit, hooking up.	 Acceleration on a roller coaster.	 Energy level diagram, de Broglie	Heat engine, Carnot efficiency, power	 resonance in a tube.	 B force on electron.	
1994	Rubric	 1994 - kick soccer ball over fence – proj.	 arc track, energy ideas, friction work	A: photoelectric effect graph; B: relativistic motion.	 work to acc electrons, control by B field	 path of light in water, TIR, lens under water.	 motional emf, induced E, Lenz's Law		
1993	Rubric	1993 – elevator, constructing d, v, a graphs for motion	 E fields & Potential of point charge	 control chgd particle with B & E fields	 refraction in glass and λ dependence	 gas process, work and heat in cycle (mistake)	 X ray tube, Compton scattering		
1992	Rubric	 1992 – vertical circle, tension, centripetal motion	conservation of momentum, energy, during collision and separation.	 elec power, fusion, heat flow	Energy level diagram, transitions	 CRT, E, B, field on electron	 convex lens, concave mirror, diagram & calc's		
1991	Rubric	 1991 – monkey static equilibrium, centripetal accel	 control of charge with E & B fields.	Heat engine, eff, heat absorption by water.	 battery, get intern resistance, ohm's law, draw circuit	Nuclear alpha decay, equation, de Broglie λ, energy, Rutherford scattering	2 slit interference, photoelectric work function		

		B1	B2	B3	B4	B5	B6	B7	B8
1990	Rubric	 1990 - inelastic collision projectile	 chg particle doing projectile path betw charged plates	 ohm's law, power	 gas cycle, work done, efficiency	accelerated elect. Resulting e-m waves, energy	 reflection, refraction, thin film interference.		
1989	Rubric	 1989 -Centripetal motion, projectile.	 electric force, potential, work	 electrical – mechanical energy equivalence, Ohm	Thermo – PV diagram, work done in various processes	Nuclear decay, energy, rest mass.	 convex lens, image formation, graph di vs do		
1988	Rubric	1988 - helicopter vertical acceleration, tension, kinematics	ball bounce, energy lost, specific heat.	 RC circuit, beginning & end	 B field of wire, force on moving charged particle	 refraction, crit angle, new medium	Photoelectric effect, calculations		
1987	Rubric	 Modified Atwood's machine	 forces, field, potential of point charges.	Heat movement, specific heat	 Ohm's law, Q=It	 refraction, speed, critical angle	 Photoelectric effect, graphical calc		
1986	Rubric	 1986 - Atwood's mach, tension, acceleration	 Energy in spring, projectiles	 Circuits, ohm's law	 Induction, forces on wire in B field	 Carnot cycle, PV diagram	Concave and convex lenses – diagrams and calculations.		
1985	Rubric	 1985 – ballistic pendulum	 static equilibrium, acceleration on incline, energy conv	 e field, work, energy, forces	 Specific heat, flow, phase change.	double slit interference in air and water.	 energy level transitions, photons		
1984	Rubric	 1984 - vertical circle, projectile	 momentum cons, elastic coll. angles	heating water, change of state, time, ohm's law, power.	 e – m forces on chg part.	 refraction, thin film interference	 radioactive decay, half life, alpha		
1983	Rubric	 1983 – friction, F = ma, tipping	 inelast coll, energy in spring, shm.	 ohms law, circuit	 thermo processes work	 concave mirror	Photoelectric effect, calculations of h, work function . . .		

		B1	B2	B3	B4	B5	B6	B7	B8
1982	Rubric	1982 (left) sprinter, kinematics graph.	 upward acceleration, tension in cables	 swing on rope, tension at lowest point, energy	 Hookup of clock and radio.	 flux, induction	 convex lens	four modern phys experiments – choose 1 and explain	
1981	Rubric	 1981 – friction, work, energy	 springs, energy, momentum cons in explosion	 stat equil of charged particle in electric field	 circuits – power, ohm's law	 convex lenses, ray diagrams	Energy absorption, specific heat.		
1980	Rubric	 1980 - static equilibrium	 circuits and connections	 photoelectric eff. Data and graph	Using one graph, sketch its companion	Nuclear decay, cons of momentum, calc of energy	 kin theory, press.		
1979	Rubric	 1979 – potential & Kinetic energy of projectile	 F = ma	muons, modern physics, relativity	 electric & magnetic forces on charged particles	 gas laws, p-v diagram, work	 refraction	 Charged spheres, elec forces.	
1978	Rubric	 Vertical circular motion	 Projectile; inelastic collision	 capacitor	 Induced emf	 Concave mirror; ray diagram	Photon collision with mass	Bohr model; deBroglie wavelength	
1977	Rubric	1977 work-energy, kinematics	 centripetal force, banked road.	 e-m forces, work, fields	 Ohm's law, power, spec ht, thermo	 Interference of sound waves. 2 pt sources	Relativity and modern physics – sketching graphs		
1976	Rubric	 Elevator; Atwood's machine	 Cons of momentum; bullet block combo	 circuits	 Mass spectrometer	Waterfall: Grav pot energy converted to thermal energy	Converging lens Ray diagram	Photoelectric effect	
1975	Rubric	 1975-friction, energy, kinematics	 electric field, work	 Thermo processes, gas laws	 single and double slit interference	 energy levels, transitions, photons	 electrical work, centripetal motion, mass spectrometer.	 pendulum, shm, energy, centripetal.	

		B1	B2	B3	B4	B5	B6	B7	B8
1974	Rubric	 Pendulum; dynamics	Electron moving in a B field	Converging lens Ray diagram	Experiment: determine # of photons/sec in a light beam	 Electrostatics; lines of equipotential	 Thermo; PV diagram	 Mechanical power of ski lift	
1973	Rubric	 Mechanics – friction	 Mechanics – energy & vertical circles	 Electron moving through E & B fields	 Induced variable current	Calorimetry - GRAPH	Standing waves in pipes	Wave-particle duality of radiation and matter	
1972	Rubric	This year's free-response section contained two-parts: Part A contained five "major" questions and seven "minor" questions.							
1971	Rubric	This year's free-response section contained two-parts: Part A contained five "major" questions and seven "minor" question.							
1970	Rubric	This year's free-response section contained two-parts: Part A contained five "major" questions and seven "minor" question.							