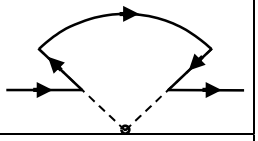
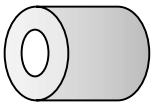
Thoughts regarding final exams:
There are too many problems to include and still have the test be doable in a two-hour time period. I will write the test and then start chopping stuff out to make it doable.

Expect many short questions with maybe 5 more involved problems. While there are no guarantees, ideally I would pick one question from each row from either column A or B (on some occasions both).

To be clear, any topics covered in the course are fair game. For example, you might notice KVL & KCL are not emphasized in the list below. I may not make you go through all the gory details on a KVL problem, but instead have you right some loop & junction equations without solving them.

I hope this gives you some idea of how I plan to get all these topics on the test while still keeping the time limit under 2 hours. Again, some topics may have to be cut for time.

Column A	Column B
Guaranteed some kind of question about E & M waves. Expect this problem to be blatantly copied from the Ch 33 workbook questions. This will be there for sure. As an example, one year I took a problem with numbers and simply made it algebraic. Other times I might change a number/prefix or the sign/direction of a quantity.	
Guaranteed conceptual/definition questions on diamagnetism, paramagnetism, ferromagnetism or Maxwell's laws similar to hmwk. This will be there for sure. Expect this problem to be blatantly copied from Ch 32 workbook questions.	
Point charges relating to $\vec{F}, \vec{E}, U \text{ or } V$ Probably triangle, square, or circle geometry	Use Biot-Savart law with ∞ long wires located on corners of square, triangle, etc to relate to $\vec{B}_{NET}$ or force on a wire
Continuous distribution of charge (arc, rod, or washer) could be non-uniform…derive $\vec{E}$ or V	Biot-Savart law using straight & circular segments 
Gauss's Law in spherical or cylindrical geometry (no slabs) (insulator/conductor/or both, possibly non-uni)	Ampere's law, cylindrical geometry (possibly non-uni)
Cap circuit (think 2 in para plus 1 in series or 2 in series plus 1 in para). Might have dielectric in/out.	Concept Q on caps in series versus para (charge, voltage, energy)
Resistor circuit (think 2 in para plus 1 in series or 2 in series plus 1 in para). Might have switch. Maybe KVL.	Concept Q on resistors in series versus para (current, voltage, power)
Problem on Φ_B & $i_{induced}$ (i.e. rod on rails with $\vec{B}_{ext}$, changing area with $\vec{B}_{ext}$, $\vec{B}_{ext}$ is function of time changing flux through loop, generator/spinning loop → ωNBA)	Conceptual Q's on mag flux & induced currents (think magnet falls thru tube or $\vec{B}_{ext}$ changes through loop)
LC oscillator	LRC series This includes sketching or interpreting plots of Z vs ω and/or i_{max} vs ω (possibly including filter circuits).
RC transient	RL transient
Force/energy on charge in electric field (think charge on a string between parallel plates, charge travels between parallel plates, two charged balls on strings)	Force on moving charge in $\vec{B}_{ext}$, torque on loop of wire in $\vec{B}_{ext}$, forces on charge in $\vec{B}_{ext}$ moving in circular motion, or forces on wires carrying current in $\vec{B}_{ext}$
Derive resistance of a shape using calculus and/or geometry. May involve temperature variation. 	Conceptual questions on resistivity, resistance, and temperature involving different shapes similar to hmwk
Determine electric field using $E_x = -\frac{dV}{dx}$ OR determine potential difference using $\Delta V = -\int \vec{E} \cdot d\vec{s}$	Electric potential versus position with graphing