

Study Guide (Midterm II)

1. Polarization and Dielectric material

Electric field with the presence of dielectric material

Continuity of the parallel component of E

What is D ?

Continuity of the vertical component of D .

Capacitors.

Solving the electric field with certain boundary conditions.

2. Magnetic field

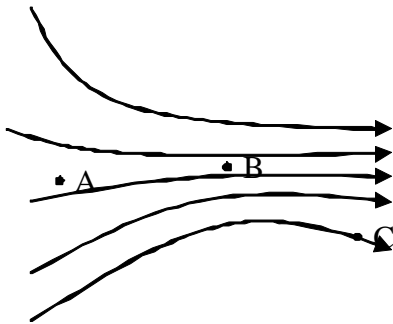
What is B ?

Biot-Savart 's law.

Ampere's Law.

5. Miscellaneous: Correspondence between E and B , and the vector operators of ∇ , $\nabla \cdot$, $\nabla \times$

Sample test questions:



1. If a positive point charge is put inside the electric field above, which of the following statement is true?

- The E field is exerting a force pointing horizontally rightward on the charge at point C.
- The E field is exerting a

force on the charge with largest magnitude at point A.

- The E field is exerting a force on the charge with smallest magnitude at point B.
- The charge has the lowest potential energy when the charge locates at C.
- The charge will be balanced at point B.

2. Assume you have a square loop. You fold it up from the middle as shown. Find the direction of the magnetic flux density B generated from the circuit loops, assuming that the length of each segment is a.

