Module 2: Electric Fields

Q1. Which statement is false?

A the electric field obeys the principle of superposition

B the density of electric field lines is directly proportional to the strength of the field

C negative charges are sources of electric field lines while positive charges sink **(BRAVO!)**

D the direction of an electric field at a point is tangential to the field at that point

A,B,D prompt: (True statement, review lecture 2.1_Electric Field)

Q2. When the charge distribution on a conductor reaches equilibrium, which of the following is true?

A any electric charge deposited on the conductor resides on the outer surface
(True, like charges repel each other, but there are other true statements)

B the electric field at the surface is perpendicular to the surface
(True, but there are other true statements)

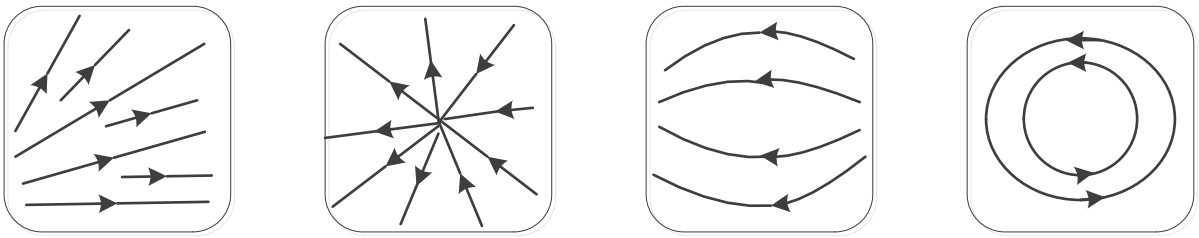
C the electric field within the conductor is zero (True, but there are other true statements)

D two of the above (review lecture 2.1_Electric Field)

E statements A, B and C **(BRAVO!)**

F none of the above (review lecture 2.1_Electric Field)

Q3. Assuming there are no charge in the regions shown, which of the four field patterns represent(s) a possible electrostatic field.



(1) (2) (3) (4)

A (1) (Incorrect, the pattern indicates existence of charge, review lecture 2.1_Electric Field)

B (3) **(BRAVO!)**

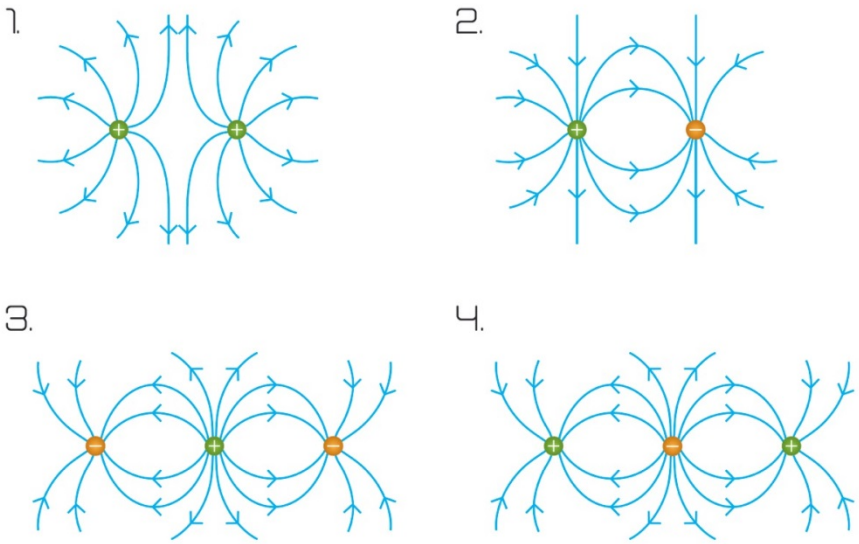
C (2) and (4) (pattern (2) is consistent with presence of charge, and pattern (4) is inconsistent with the electric field line convention: extends from positive charge to negative charge, review lecture 2.1_Electric Field)

D (1) and (3) (pattern (1) indicates existence of charge, review lecture 2.1_Electric Field)

E some other combination (review lecture 2.1_Electric Field)

F none of the above (review lecture 2.1_Electric Field)

Q4. Which of the following diagrams correctly describe(s) the electric field patterns?

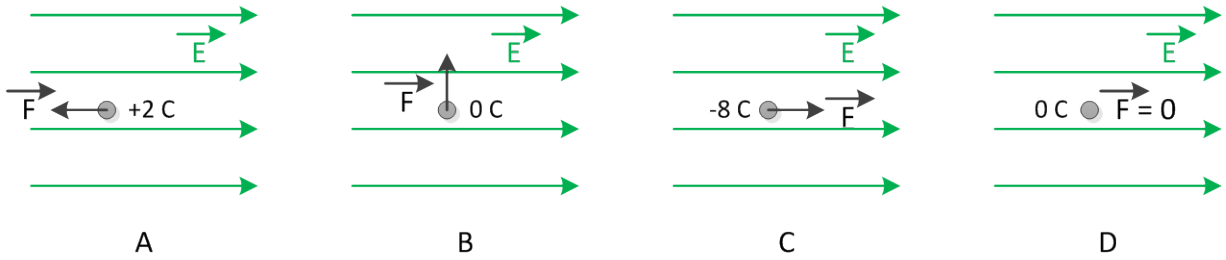


A. Two of the above **(BRAVO! patterns 1 and 3 are correct)**

B. All of the above (Incorrect, patterns 2 and 4 are incorrect, review lecture 2.1_Electric Field)

C. None of the above (Incorrect, review lecture 2.1_Electric Field)

Q5. Which of the following diagrams provides the correct direction for the electric field and electric force vectors?



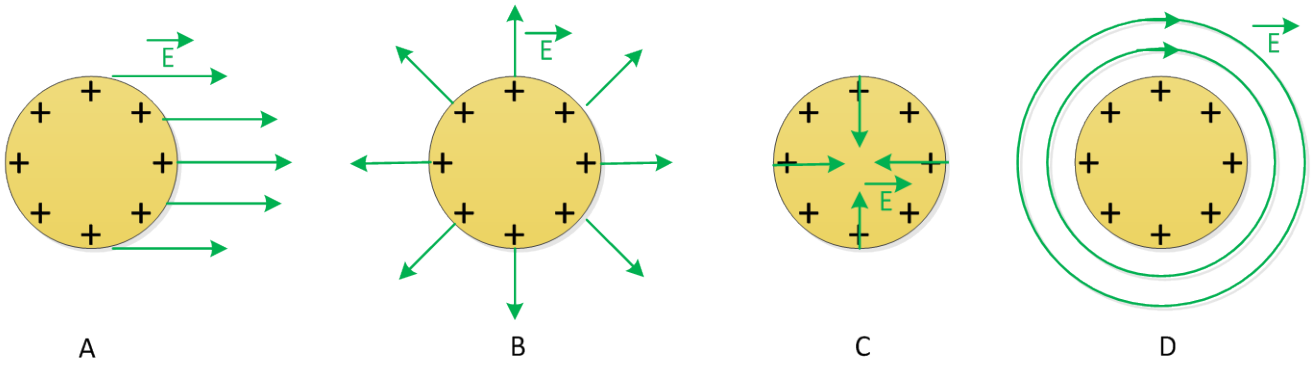
A (Incorrect, should be pointing to the right, review lecture 2.1_Electric Field)

B (Incorrect, review lecture 2.1_Electric Field)

C (Incorrect, should be pointing to the left, review lecture 2.1_Electric Field)

D **(BRAVO!)**

Q6. For the charged sphere below, which of the diagrams correctly illustrates the direction of the electric field?



B **(BRAVO!)**

A,C,D prompt: (Incorrect, review lecture 2.1_Electric Field)