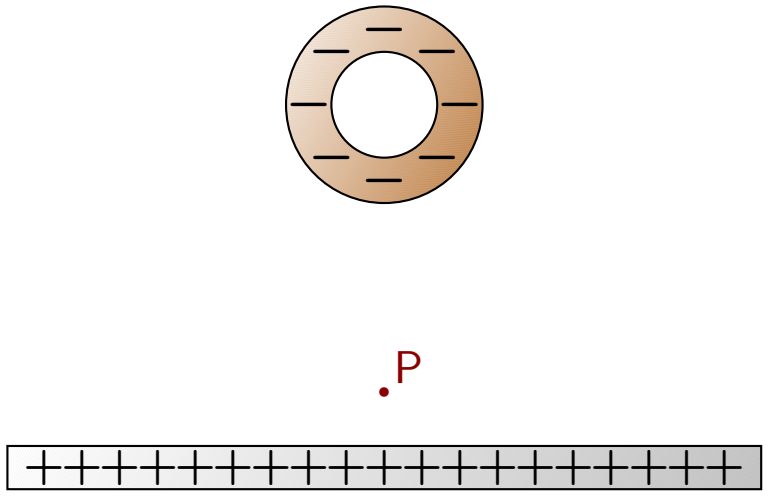
Question 1

A positively charged plate is placed near a negatively charged ring. The plate and ring are held fixed as illustrated and the charges are evenly distributed on each.



Consider the statement regarding the electric field **produced by the ring and the plate:**

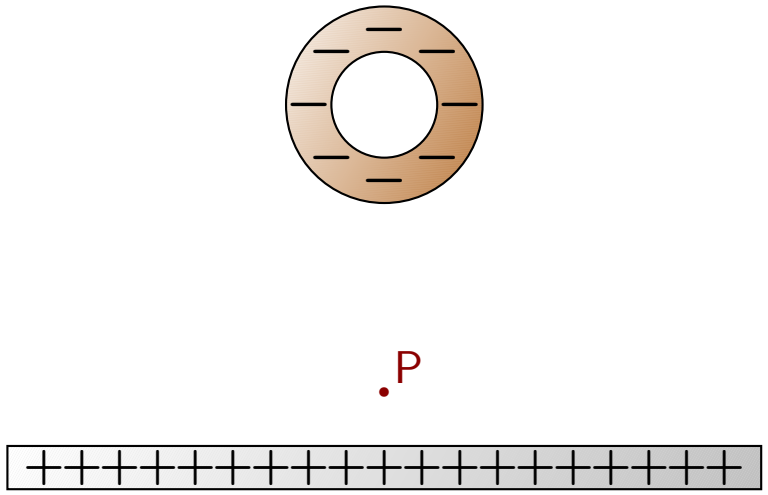
"The electric field consists of two vectors, one indicating a downward attraction on the ring and the other an upward attraction on the plate."

Is this statement true or false?

1. True
2. False
3. Depends on the situation.

Question 2

A positively charged plate is placed near a negatively charged ring. The plate and ring are held fixed as illustrated and the charges are evenly distributed on each.



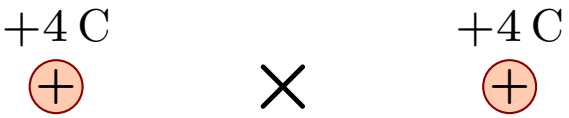
Which of the following best represents the direction of the electric field **produced by the ring and the plate** at P?

1. ↑ for positive probe charge ↓ for negative probe charge.
2. ↓ for positive probe charge ↑ for negative probe charge.
3. ↑ for any probe charge.
4. ↓ for any probe charge.
5. Zero field.

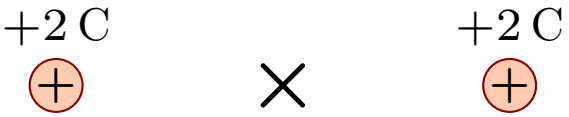
Question 3

In the following separate scenarios two source charges produce electric fields. Consider the magnitude of the field at the location midway between the two source charges.

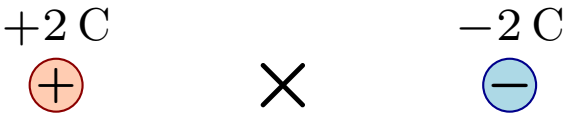
Case A



Case B



Case C



Which of the following describes the rank of the magnitudes of the fields at the midpoint?

1. $E_C > E_A = E_B$
2. $E_A = E_B = E_C$
3. $E_A = E_B > E_C$
4. $E_A > E_B > E_C$
5. $E_C > E_A > E_B$

Question 4

Two point charges with equal magnitude but opposite sign are located as illustrated.

A third charge, Z, is placed at point P.

Which of the following best represents the net electric field produced by A and B at the location of Z?

1. $\rightarrow$ if Z is positive; $\leftarrow$ if Z is negative.
2. $\leftarrow$ if Z is positive; $\rightarrow$ if Z is negative.
3. $\rightarrow$ if Z is positive; $\rightarrow$ if Z is negative.
4. $\leftarrow$ if Z is positive; $\leftarrow$ if Z is negative.