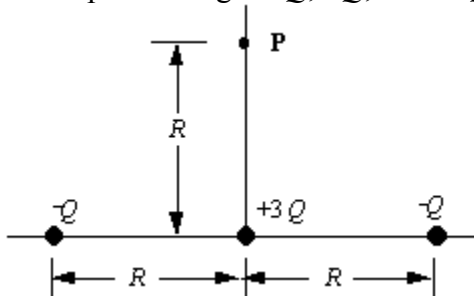


Instructions:

- Closed book
- You may use: a pencil, an eraser, and a calculator. You are not permitted to use a calculator with a display capable of showing graphs, formulas, or text messages.
- No other notes, materials, or electronic devices are permitted.

With the exam paper, you are provided a standard page of formulas, on colored paper.

- Which one of the following statements is true concerning the magnitude of the electric field at a point in space?
 - It is a measure of the ratio of the charge on an object to its mass.
 - It is a measure of the electric force per unit charge on a test charge.
 - It is a measure of the total charge on the object.
 - It is a measure of the electric force per unit mass on a test charge.
 - It is a measure of the electric force on any charged object.
- Three point charges $-Q$, $-Q$, and $+3Q$ are arranged along a line as shown in the sketch.



What is the electric potential at the point P?

- A) $-2kQ/R$ B) $+kQ/R$ C) $-1.6kQ/R$ D) $+4.4kQ/R$ E) $+1.6kQ/R$
- In the Coulomb's Law experiment, after adjusting the zero for the torsion-wire balance, you apply a charge to both spheres and you find that the balance turns by 20 degrees; by how many degrees would you expect it to turn if you doubled the separation between the spheres?"
 - 5
 - 10
 - 20
 - 40
 - 80

Answers

- B
- E
- A

this sample exam illustrates 3 types of questions: conceptual, calculation, and lab.

An actual exam will have approx. 15 questions total, including one lab question