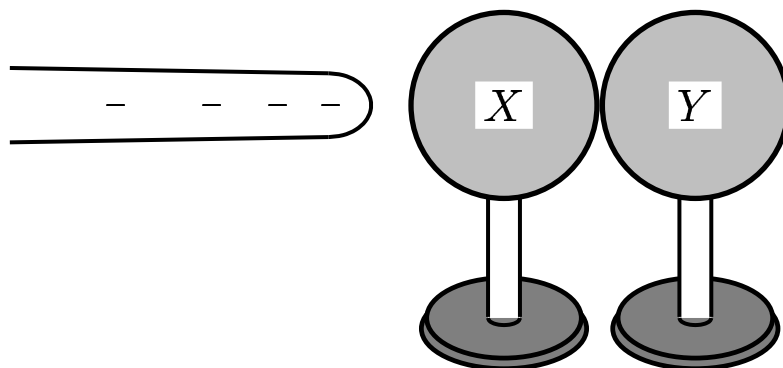


Two initially uncharged conductors  $X$  and  $Y$ , are mounted on insulating stands and are in contact, as shown below.

A negatively charged rod is brought near but does not touch them.

With the rod held in place, conductor  $Y$  is moved to the right by pushing its stand, so that the conductors are separated. Finally, the rod is removed.



What is the sign of the net charge on  $X$ ?

- A) negative
- B) positive
- C) neutral
- D) negative or neutral
- E) positive or neutral

Because the negatively charged rod is held near the conductor  $X$ , the electrons in the conductor tend to be pushed away from the rod, which will make the conductor  $Y$  negatively charged.

When we separate the two conductors, the conductor  $Y$  will remain negatively charged even when the rod is removed.

The sum of the charges on  $X$  and  $Y$  is zero, therefore the conductor  $X$  must be positively charged.

Answer **B**.

23.02-01 Induction 2004-3-24