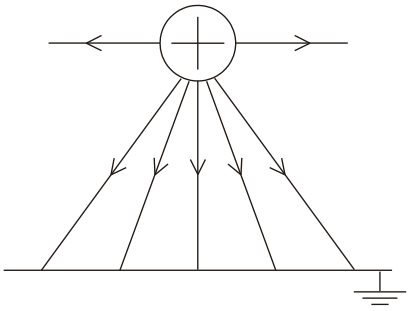
NAME: .....

PHYSICS

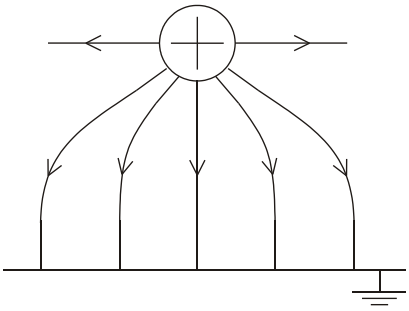
ELECTROSTATICS II

1. Which diagram below best represents the electric field pattern between a positively charged conducting sphere and an earthed metal plate?

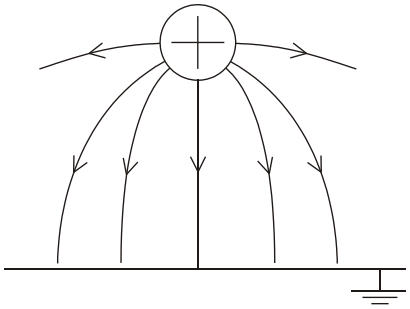
A.



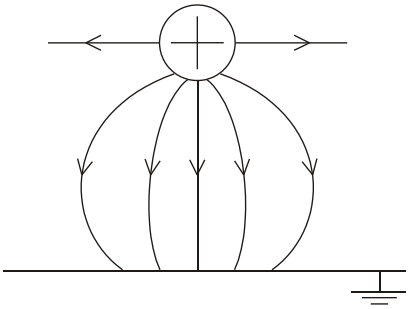
B.



C.

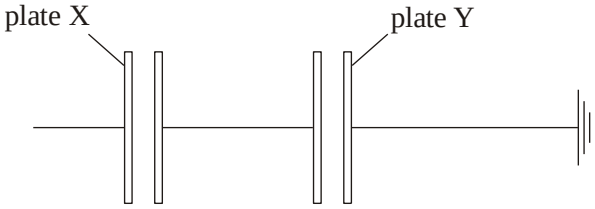


D.



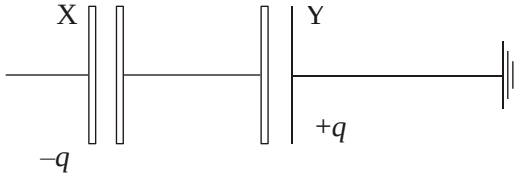
(1)

2. Two pairs of uncharged parallel plates are placed in a vacuum and are connected as shown.

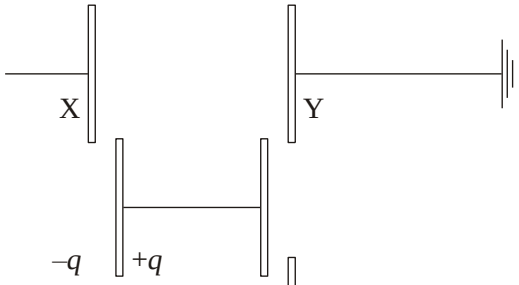


A negative charge of magnitude *q* is placed on plate X. Plate Y is connected to earth.
Which **one** of the following diagrams shows the distribution of charge on the plates?

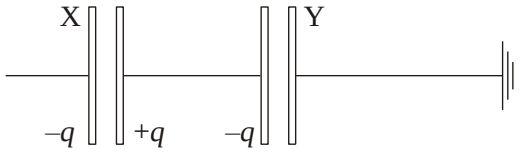
A.



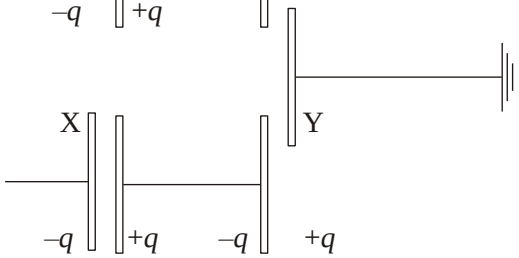
B.



C.



D.



(1)

3. Which of the following is the correct value of the electronvolt, measured in SI Units?

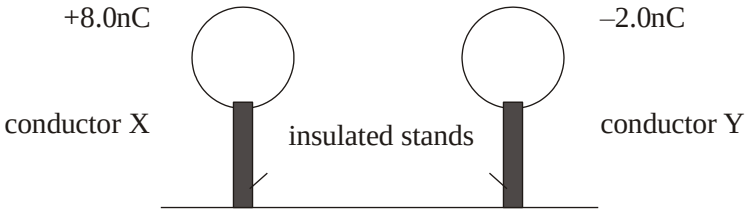
A. 1.6×10^{-19} N

B. 1.6×10^{-19} J

C. 9.1×10^{-31} N

D. 9.1×10^{-31} J

4. Two identical spherical conductors X and Y are mounted on insulated stands. X carries a charge of +8.0 nC and Y carries a charge of –2.0 nC.



The two conductors are brought into contact and are then separated. Which of the following gives the charge on each conductor?

A.

B.

	Charge on X	Charge on Y
	0.0 nC	0.0 nC
	+8.0 nC	-2.0 nC
C.	+5.0 nC	+5.0 nC

D. +3.0 nC +3.0 nC

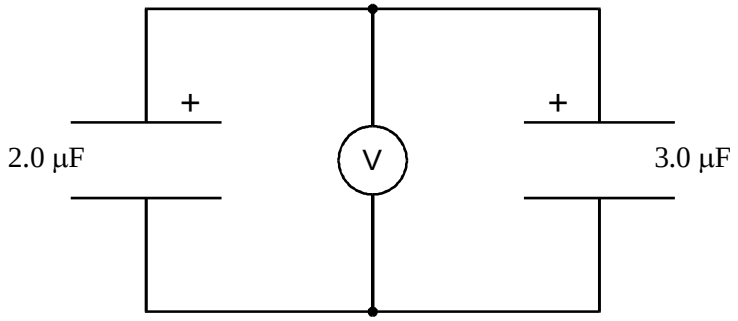
5. A 2.0 μF capacitor is charged to a potential difference (p.d.) of 50 V and a 3.0 μF capacitor is charged to a p.d. of 100 V.

Calculate the charge on the plates of each capacitor.
Write your answers in the table below.

Capacitor	2.0 μF	3.0 μF
P.d.	50 V	100 V
Charge		

(2)

The capacitors are then joined together **in parallel** with their positive plates connected together.



What is the equivalent capacitance of this combination?

.....

Equivalent capacitance = ... μF (1)

[Total 3m]

6. A 3.0 mF and a 5.0 mF capacitor are connected in series with a 12 V battery.

a. Find the equivalent capacitance.

[3m]

b. Find the charge on each capacitor.

[3m]

c. Find the potential drop (or voltage) across each capacitor. 3m

[3m]
[Total 9m]

7. This 8.0 μF 6.0 μF and 5.0 μF capacitors are connected in series. Calculate the total capacitance for this arrangement.

[3m]