

Electricity: Review

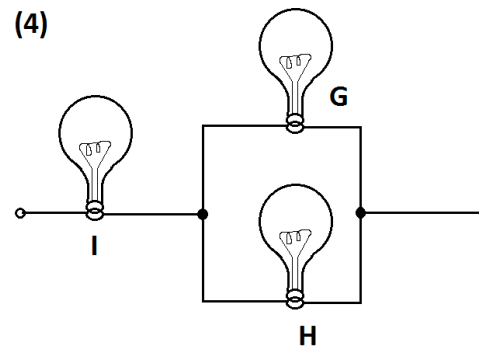
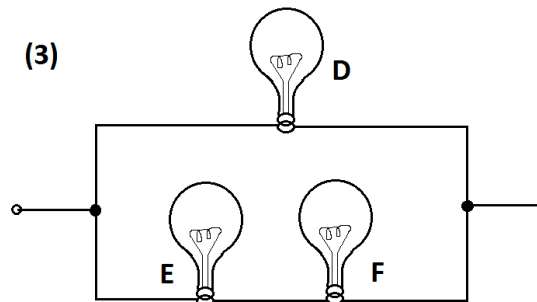
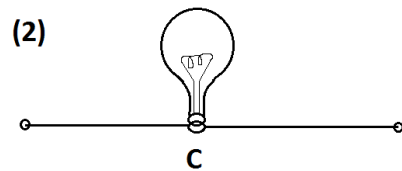
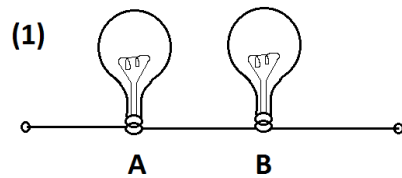
⚠ This is a preview of the draft version of the quiz

Started: Nov 4 at 10:58am

Quiz Instructions

Question 1

1 pts



All the circuits 1, 2, 3 and 4 (shown above) are connected individually across a same value voltage source. Considering that all the lamps are similar, which of the following statement(s) is/are true?

1. Lamps A, B, E and F will be equally bright.
2. Lamps C and D will be equally bright.
3. Lamps G and H will be dimmer than all the other lamps.
4. All the lamps will be equally bright.

All the statements are true.

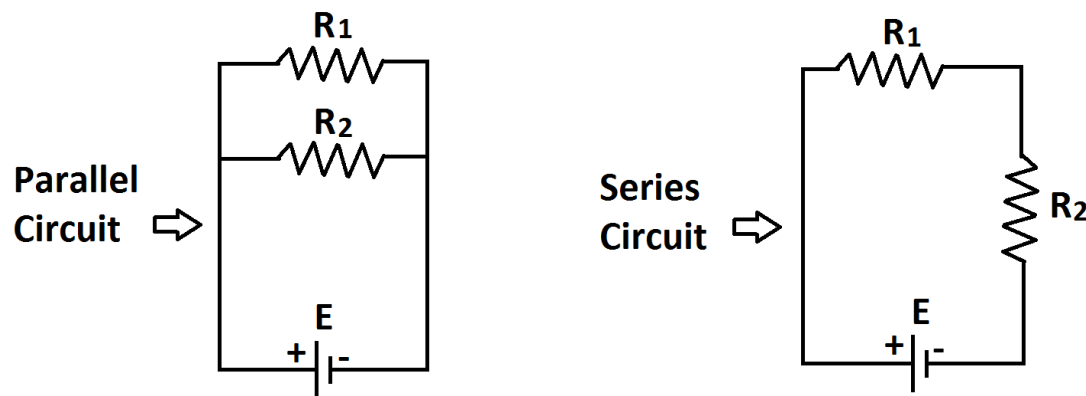
1, 2 and 4 only

1 and 2 only

1, 2 and 3 only

Question 2

1 pts



In the diagrams above, resistors R_1 and R_2 are shown in two different connections to the same source of emf 'E' that has no internal resistance. How does the power dissipated by the resistors in these two cases compare?

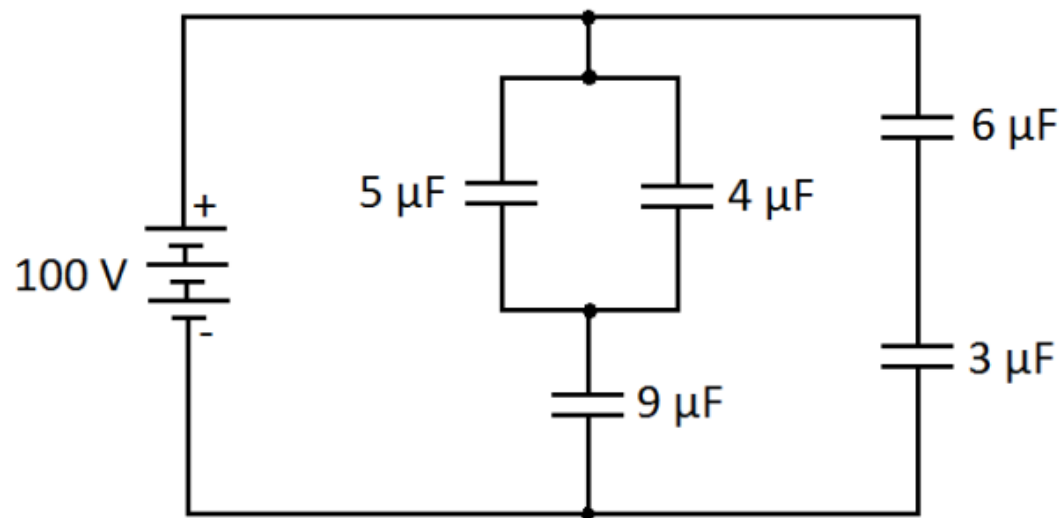
- It is different for each connection, but one must know the values of R_1 and R_2 to know which one is greater.
- It is the same for both connections.
- It is different for each connection, but one must know the value of E to know which is greater.
- It is greater for the series connection.
- It is greater for the parallel connection.

Question 3**1 pts**

An isolated charged capacitor with air between its plates has a potential difference V_0 and charge Q_0 . After the space between the plates is filled with oil, the difference in potential is V and the charge is Q . Which of the following pairs of relationships is correct?

- Q equals Q_0 but V is greater than V_0
- Q is smaller than Q_0 but V equals V_0
- Q is greater than Q_0 and V is greater than V_0
- Q equals Q_0 but V is smaller than V_0
- Q equals Q_0 and V equals V_0

Question 4**1 pts**



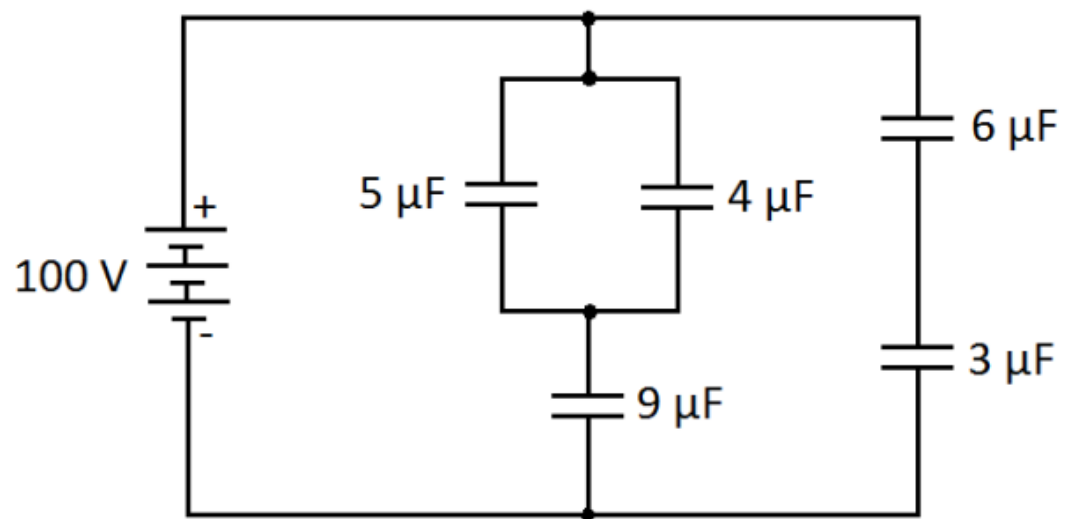
The equivalent capacitance of the above capacitor network is nearly-

- 7.5 μF
- 10 μF
- 9 μF
- 6.5 μF

Question 5

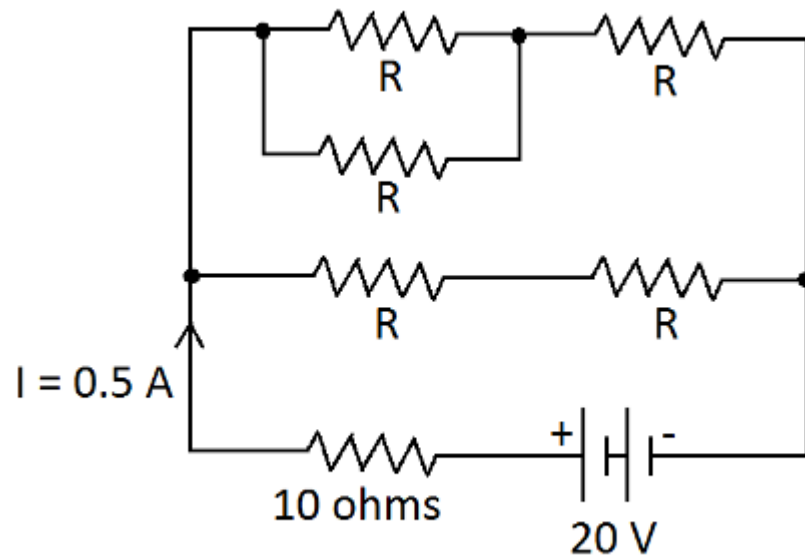
1 pts

What will be the charge stored in the 4 μF capacitor?



- 300 μC
- 200 μC
- 450 μC
- 250 μC

Question 6**1 pts**



In the circuit shown above, what is the value in ohms of resistance 'R' for which the current in the circuit is 0.5 A with a 20 V battery source?

- 28
- 30
- 21
- 35

Question 7

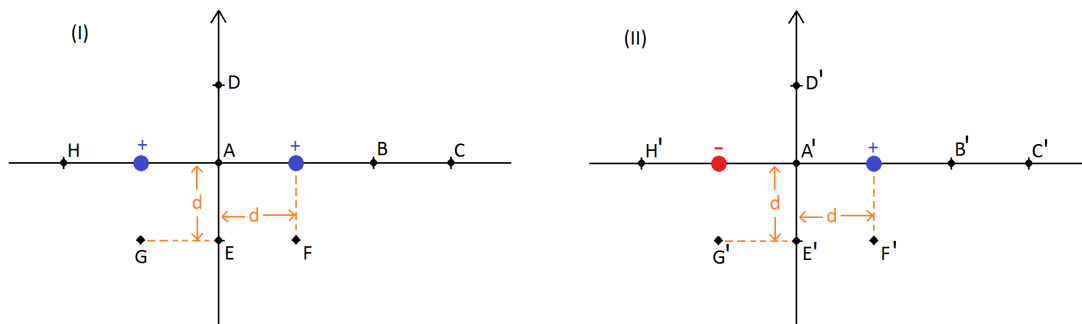
1 pts

A certain microwave oven draws 11.0 A of current when it is operated at 120 V household lines. If electrical energy costs 10 cents per kilowatt-hour, how much does it cost in cents to operate the microwave oven for 50 minutes?

- 21
- 11
- 14
- 7

Question 8

1 pts



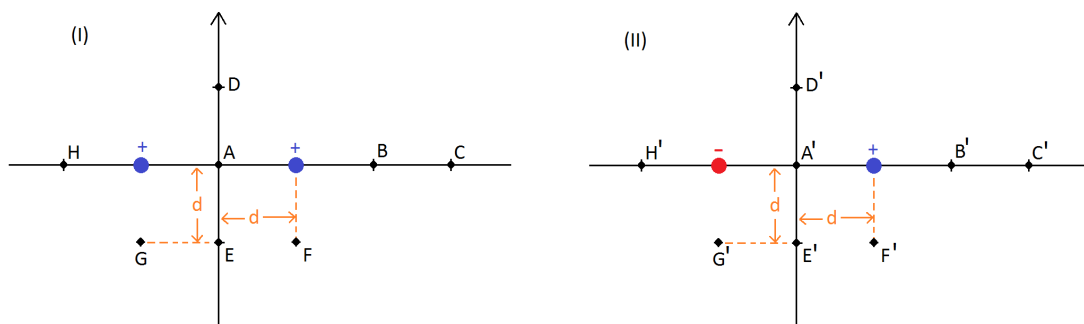
In the above diagrams all the grid points have horizontal and vertical spacing of distance ' d '. Two charges are kept at a distance of $+d$ and $-d$ from the origin. positive charges are shown as blue and negative charges are shown as red (**consider that the magnitude is the same for all these four charges shown**). The points in case (I) are labeled as A, B, C,...,H and those in case (II) are labeled as A', B', C',...,H'. Which of the following statement(s) is/are true about the electric field (**choose all the true statements to get the credit**)?

- Electric fields at H and B are equal in magnitudes but they point in opposite directions.
- Net electric field at E points downwards whereas net electric field at E' points towards left.
- Net electric field at point A and A' is zero.
- Electric fields at H' and B' are equal in magnitudes but they point in opposite directions.
- Net electric field at any point on the given plane can never be zero in case (II). correct

Question 9

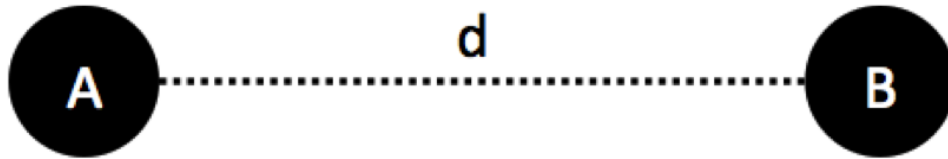
1 pts

What is the change in potential energy of a positive point charge 'q' when it is moved from D to A in case (I) and D' to A' in case (II)?



In the above diagrams all the grid points have horizontal and vertical spacing of distance 'd'. Two charges are kept at a distance of $+d$ and $-d$ from the origin. positive charges are shown as blue and negative charges are shown as red (**consider that the magnitude is the same for all these four charges shown**). The points in case (I) are labeled as A, B, C, ..., H and those in case (II) are labeled as A', B', C', ..., H'. Which of the following statement(s) is/are true about the electric field (**choose all the true statements to get the credit**)?

- Change in potential energy of the charge 'q' is positive in case (I) and zero in case (II).
- Change in potential energy of the charge 'q' is negative in both the cases (I and II).
- Change in potential energy of the charge 'q' is positive in both the cases (I and II).
- Change in potential energy of the charge 'q' is zero in both the cases (I and II).

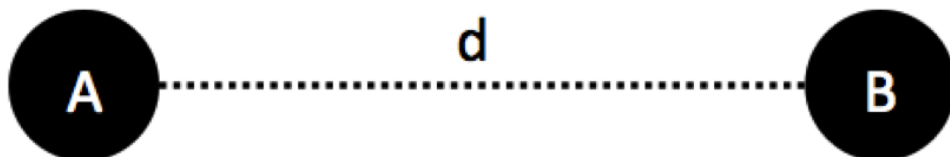
Question 10**1 pts**

Consider two objects A and B separated by a distance d . Object A experiences a force to the right because of its proximity to Object B. Choose all of the following possibilities below that are true.

- Object A and Object B both have mass
- Object A and Object B are both electrons
- Object A is positively charged and Object B is negatively charged
- Object A and Object B are both positively charged

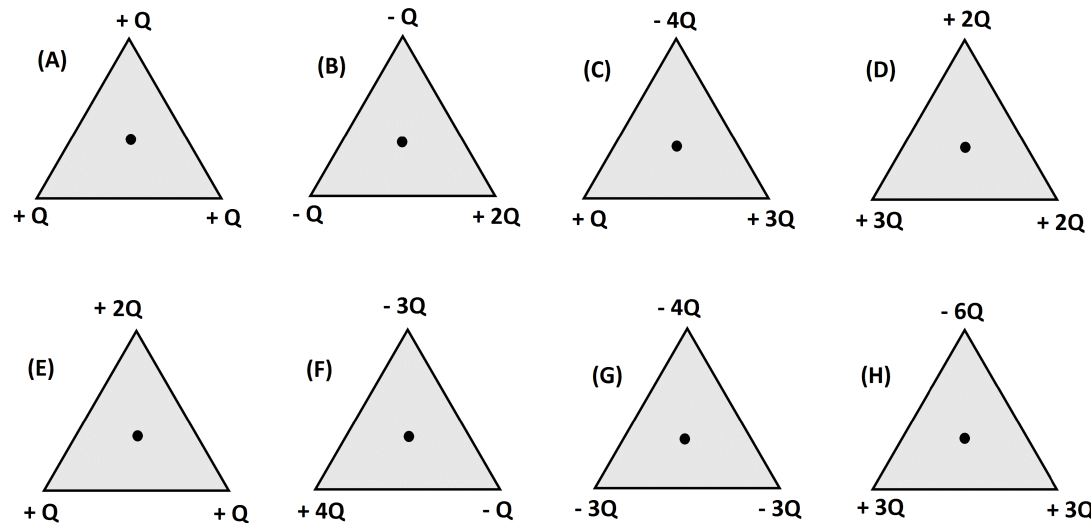
Question 11**1 pts**

Consider Object A and Object B to have equal but opposite charges. Which of the following will create the largest change in the force A experiences because of B?



- reducing the charge on both A and B to half the original value
- doubling the charge on A and decreasing the separation to $d/2$
- reducing the charge on B to half its original value and decreasing the separation to $d/2$
- doubling the charge on both A and B and increasing the separation to $4d$

Question 12**1 pts**



Which of the above arrangements of charges will have net zero electric potential at the center (Choose all correct options to get the credit)?

 G

 B

 F

 D

 E

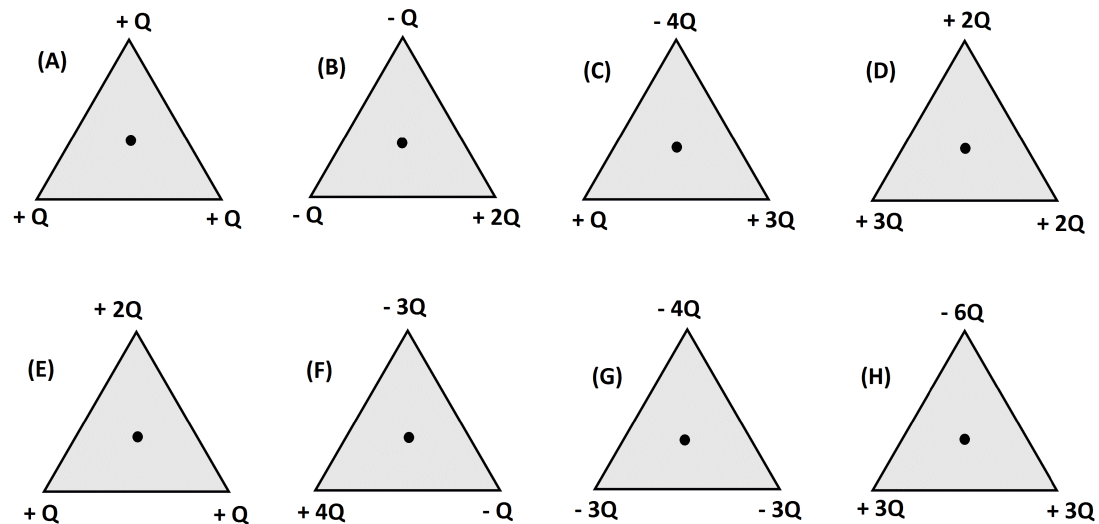
 C

 H

 A

Question 13

1 pts



Which of the above arrangements of charges will have zero net electric field at the center?

 F

 H

 C

 E

 D

 G

B

A

Not saved

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