QB365 Question Paper Software
12th Standard - Physics
Electrostatic Potential and Capacitance Assertion and reason

Exam Time: 00:20 Hrs | Date: 2025-09-30

Total Marks: 10

Questions:

1. **Assertion (A) :** The whole charge of a conductor cannot be transferred to another isolated conductor.
   Reason (R) : The total transfer of charge from one to another is not possible.
   Codes:
   (a) Both A and R are true and R is the correct explanation of A
   (b) Both A and R are true but R is NOT the correct explanation of A
   (c) A is true but R is false
   (d) A is false and R is also false

2. **Assertion (A)** : Two adjacent conductors. carrying the same positive charge have no potential difference between them.
   Reason (R) : The potential of a conductor does not depend upon the charge given to it.
   Codes:
   (a) Both A and R are true and R is the correct explanation of A
   (b) Both A and R are true but R is NOT the correct explanation of A
   (c) A is true bttt R is false
   (d) A is false and R is also false

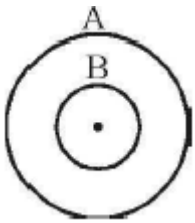
3. **Assertion (A) :** A capacitor can be broken by placing large amount of charge on it.
   Reason (R) : After breakage potential, capacitor is destroyed.
   Codes:
   (a) Both A and R are true and R is the correct explanation of A
   (b) Both A and R are true but R is NOT the correct explanation of A
   (c) A is true but R is false
   (d) A is false and R is also false

4. **Assertion (A)** : The surface of a conductor is an equipotential surface.
   Reason (R) : Conductor allows the flow of charge.
   Codes:
   (a) Both A and R are true and R is the correct explanation of A
   (b) Both A and R are true but R is NOT the correct explanation of A
   (c) A is true but R is false
   (d) A is false and R is also false

5. **Assertion (A) :** No work is done in taking a positive charge from one point to other inside a positively charged metallic sphere while outside the sphere work is done in taking the charge toward the sphere.
   Reason (R) : Inside the sphere electric potential is same at each potential, but outside it is different for different points.
   Codes:
   (a) Both A and R are true and R is the correct explanation of A
   (b) Both A and R are true but R is NOT the correct explanation of A

(c) A is true but R is false
(d) A is false and R is also false

6. **Assertion :** Two concentric charged shells are given. The potential difference between the shells depends on charge of inner shell.
Reason : Potential due to charge of outer shell remains same at every point inside the sphere.
Codes:
(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
(c) If the Assertion is correct but Reason is incorrect.
(d) If both the Assertion and Reason are incorrect.



7. **Assertion :** For a charged particle moving from point P to point Q, the net work done by an electrostatic field on the particle is independent of the path connecting point P to point Q.
Reason : The net work done by a conservative force on an object moving along a closed loop is zero.
Codes:
(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
(c) If the Assertion is correct but Reason is incorrect.
(d) If both the Assertion and Reason are incorrect.

8. **Assertion :** For a point charge, concentric spheres centered at a location of the charge are equipotential surfaces.
Reason : An equipotential surface is a surface over which potential has zero value.
Codes:
(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
(c) If the Assertion is correct but Reason is incorrect.
(d) If both the Assertion and Reason are incorrect.

9. **Assertion**: The equatorial plane of a dipole is an equipotential surface.
Reason: The electric potential at any point on equatorial plane is zero.
Codes:
(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.

(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
(c) If the Assertion is correct but Reason is incorrect.
(d) If both the Assertion and Reason are incorrect.

10. **ASSERTION:** Positive charge always moves from a higher potential point to a lower potential point.
REASON: Electric potential is a vector quantity
Codes:
A) If both assertion and reason are true and reason is the correct explanation of assertion.
B) If both assertion and reason are true and reason is not the correct explanation of assertion.
C) If assertion is true but reason is false.
D) If both assertion and reason are false.
E) If assertion is false but reason is true.

Answers Key:

1. **(d):** The whole charge of a conductor can be transferred to another isolated conductor, if it is placed inside the hollow insulated conductor and connected with it.
2. **(d):** The potential of a conductor depends upon the charge given to it and there exist a potential different between two adjacent conductors.
3. **(b):** When large amount of charges are placed on capacitor a high potential difference is established between its conducting components. If this potential difference is above what is called breakage potential, an electric discharge results, destroying the capacitor. If the capacitor contains an insulator between its conducting components, the insulator will be burnt at the atomic/molecular level. A capacitor subjected to voltage exceeding the breakage potential cannot be recovered. It should be discarded and replaced ,
4. **(a):** If two points on a conductor were at different potentials, charge would flow from higher potential to lower potentials, till their potentials become equal. A surface on which the potential has the same value everywhere is called an equipotential surface.
5. **(a)**: Inside the charged metallic sphere every point is at the same electric potential, hence $W = q\Delta V = 0$. But outside the sphere, there exists a potential gradient at every point, hence $\dot{W} \neq 0$.
6. (a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
7. (a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
8. (c) If the Assertion is correct but Reason is incorrect.
9. (b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
10. C) If assertion is true but reason is false.