Easy | Deputy Executive Engineer (Electric | 2026 | orts Authority of Gujarat / Assistant Engineer (El

Consider the following statements regarding Electric Potential: 1. Electric potential is defined as work done in bringing a unit positive charge from infinity

A All of the above

B 1 and 3 only

C 2 and 3 only

D **1, 2 and 4 only** Correct

Correct Answer: D

Full Detailed Explanation

Correct Answer: D - 1, 2 and 4 only Quick Concept Explanation The potential difference is path-independent because electrostatic fields are conservative, and electric field is the negative gradient of potential. Equipotential surfaces therefore have no tangential electric-field component and intersect field lines at right angles. Key relation: E= V; V= E dl.Exam focus: Potential is scalar; electric field is vector. Common trap: Do not assign a direction to electric potential. Statement-wise Verification Statement 1 - Correct.Electric potential is defined as work done in bringing a unit positive charge from infinity to a point.Potential is scalar; electric field is vector. Statement 2 - Correct.Potential difference between two points is independent of the path taken between them.The potential difference is path-independent because electrostatic fields are conservative, and electric field is the negative gradient of potential. Statement 3 - Incorrect.Electric potential is a vector quantity since it has magnitude and direction.The correct principle is: Potential is scalar; electric field is vector. Statement 4 - Correct.Equipotential surfaces are always perpendicular to electric field lines.Equipotential surfaces therefore have no tangential electric-field component and intersect field lines at right angles. Core Concept Electrostatic