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

Consider the following statements regarding Ampere s Law: 1. Ampere s circuital law relates line integral of magnetic field around closed path to current

A 1, 2 and 3 only

B 1, 2, 3 and 4

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 Ampere's circuital law relates circulation of magnetic field to enclosed current for magnetostatic cases. Symmetric geometries such as an infinite straight conductor or long solenoid make the integral law especially useful. Key relation: H dl=I_enclosed (magnetostatic); H dl=I_c+d/dt D dS (general form).Exam focus: For time-varying fields, use the Ampere-Maxwell form. Common trap: Saying Ampere's law has no time-varying extension is incomplete. Statement-wise Verification Statement 1 - Correct.Ampere s circuital law relates line integral of magnetic field around closed path to current enclosed.Ampere's circuital law relates circulation of magnetic field to enclosed current for magnetostatic cases. Statement 2 - Correct.It is useful for symmetric current distributions such as infinite wires and solenoids.Symmetric geometries such as an infinite straight conductor or long solenoid make the integral law especially useful. Statement 3 - Incorrect.Ampere s law is valid only for static fields and not for time-varying fields.The correct principle is: For time-varying fields, use the Ampere-Maxwell form. Statement 4 - Correct.Magnetic field inside a long solenoid is uniform.Ampere's circuital law relates circulation of magnetic field to enclosed current for magnetostatic cases. Core Concept