

Easy

Deputy Executive Engineer (Electrician) 2026

Sports Authority of Gujarat / Assistant Engineer (Electrical)

Consider the following statements regarding freewheeling diode: 1. It provides path for inductive load current. 2. It reduces voltage spikes. 3. It improves

A

1, 2 and 3 only

Correct

B

1 and 4 only

C

2 and 3 only

D

All of the above

Correct Answer: A

Full Detailed Explanation

Correct Answer: A - 1, 2 and 3 only Quick Concept Explanation A freewheeling diode gives inductive current a path when the main source/switch is removed. It clamps otherwise large inductive overvoltage, keeps current continuous and can improve efficiency and waveform quality in DC converter/rectifier circuits. Key relation: Inductor relation $v=L \frac{di}{dt}$ explains the voltage spike if current path is interrupted.Exam focus: Always provide a current path for stored inductive energy. Common trap: Freewheeling diodes are not limited to AC circuits. Statement-wise Verification Statement 1 - Correct.It provides path for inductive load current.Always provide a current path for stored inductive energy. Statement 2 - Correct.It reduces voltage spikes.Inductor relation $v=L \frac{di}{dt}$ explains the voltage spike if current path is interrupted. Statement 3 - Correct.It improves efficiency.It clamps otherwise large inductive overvoltage, keeps current continuous and can improve efficiency and waveform quality in DC converter/rectifier circuits. Statement 4 - Incorrect.It is used only in AC circuits.The correct principle is: It clamps otherwise large inductive overvoltage, keeps current continuous and can improve efficiency and waveform quality in DC converter/rectifier circuits. Core Concept A freewheeling diode gives inductive current a path when the main source/switch is removed. It