

Medium

Deputy Executive Engineer (Electrician) 2026

Gujarat Public Service Commission / Assistant Engineer (Electrical)

Consider the following statements regarding the Power MOSFET and IGBT: 1. MOSFETs have a positive temperature coefficient of resistance, making them easy

A**1, 2 and 3 only****Correct****B****2, 3 and 4 only****C****1 and 3 only****D****1, 2, 3 and 4**

Correct Answer: A

Full Detailed Explanation

Correct Answer: A - 1, 2 and 3 only Quick Concept Explanation Power MOSFETs are majority-carrier, voltage-controlled devices with fast switching and a positive temperature coefficient of on-resistance that assists current sharing in parallel. IGBTs combine MOS-gate drive with bipolar conduction and exhibit tail current at turn-off, making them attractive at higher voltage/power but usually lower switching frequency than MOSFETs. Exam focus: High-frequency low/medium voltage MOSFET; higher voltage/power often IGBT. Common trap: Both MOSFET and IGBT are not current-controlled devices. Statement-wise Verification Statement 1 - Correct. MOSFETs have a positive temperature coefficient of resistance, making them easy to parallel. Power MOSFETs are majority-carrier, voltage-controlled devices with fast switching and a positive temperature coefficient of on-resistance that assists current sharing in parallel. Statement 2 - Correct. IGBTs exhibit "current tailing" during turn-off, which increases switching losses. IGBTs combine MOS-gate drive with bipolar conduction and exhibit tail current at turn-off, making them attractive at higher voltage/power but usually lower switching frequency than MOSFETs. Statement 3 - Correct. MOSFETs are preferred over IGBTs for low-power applications with switching frequencies above 200 kHz. IGBTs combine MOS-gate drive with bipolar