A Major-Project report on

"Dual-T-Type Five-Level Cascaded Multilevel Inverter with Double Voltage Boosting Gain"

Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfilment of the academic requirements for

the award of Degree of

BACHELOR OF TECHNOLOGY

In

ELECTRICAL & ELECTRONICS ENGINEERING

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CERTIFICATE

This is to certify that the major project entitled **"Dual-T-Type Five-Level Cascaded Multilevel Inverter With Double Voltage Boosting Gain"** submitted to **JNTUH** carried out by the following students of **IV-B.Tech** in the partial fulfillment for the award of the B.Tech Degree in **Electrical &Electronics Engineering** during the academic year 2022-23.

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ABSTRACT

The switched-capacitor-based cascaded multilevel inverters (CMI) have been emerging due to their voltage boosting capability. Unfortunately, they suffer from impulse charging current and nonuniform operation. This article presents a topology termed as dual-T-type five-level CMI to resolve these problems without compromising the desirable voltage boosting characteristic. The main idea is to integrate a half bridge and an inductor to soft charge a capacitor that is connected in series with the dc source. The capacitor enables the voltage gain boosted to two, while the control of eight power switches that constitutes a dual-T structure enables five voltage levels generation. In addition, uniform operation is achieved for cascaded extensions. The operating principle of the proposed topology is analyzed and elaborated. For validation, simulation, and experimental results of a prototype are presented.

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