

ABSTRAK

RANCANG BANGUN MODUL *TRAINER* ELEKTRONIKA DIGITAL BERBASIS GERBANG LOGIKA, FLIP – FLOP DAN SEVEN SEGMENT

(2026 : 100 Halaman + 63 Gambar + 44 Tabel + 24 Daftar Pustaka + Lampiran)

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Modul trainer bekerja dengan memanfaatkan toggle switch sebagai masukan logika yang diproses oleh rangkaian gerbang logika, D Flip-Flop, dan decoder seven segment. Keluaran rangkaian ditampilkan melalui LED sebagai indikator logika HIGH dan LOW serta seven segment sebagai penampil angka sesuai kombinasi masukan. Pengujian dilakukan dengan memberikan berbagai kombinasi logika pada setiap rangkaian dan membandingkan hasilnya dengan tabel kebenaran masing-masing IC. Hasil pengujian menunjukkan bahwa seluruh gerbang logika, D Flip-Flop, dan seven segment berfungsi sesuai karakteristiknya, sehingga modul trainer dapat digunakan sebagai media praktikum elektronika digital yang efektif dan mudah dipahami.

Kata Kunci : Modul Trainer, Gerbang Logika, IC 7408 7432 7404 7400 7402 7486 74266, D Flip – flop 7474, Seven Segment 7448.

ABSTRACT

DESIGN AND DEVELOPMENT OF A DIGITAL ELECTRONICS TRAINER MODULE BASED ON LOGIC GATES, FLIP-FLOP, AND SEVEN-SEGMENT DISPLAY

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The trainer module operates by utilizing toggle switches as logic inputs, which are processed by logic gate circuits, D Flip-Flop circuits, and a seven-segment decoder. The circuit outputs are displayed through LEDs to indicate HIGH and LOW logic levels, while the seven-segment display presents numerical values according to the input combinations. The module was tested by applying various logic input combinations to each circuit and comparing the outputs with the corresponding truth tables of each integrated circuit (IC). The test results indicate that all logic gates, the D Flip-Flop, and the seven-segment display function according to their respective characteristics. Therefore, the developed trainer module can be effectively used as a practical learning medium for digital electronics, enabling students to better understand the fundamental concepts of digital circuits.

Keywords : Trainer Module, Logic Gates, IC 7408, IC 7432, IC 7404, IC 7400, IC 7402, IC 7486, IC 74266, D Flip-Flop IC 7474, Seven-Segment Display IC 7448.