

## DAFTAR ISI

|   |             |
|---|-------------|
| <b>HALAMAN JUDUL .....</b>                        | <b>i</b>    |
| <b>HALAMAN PENGESAHAN .....</b>                   | <b>ii</b>   |
| <b>HALAMAN PERSEMBAHAN .....</b>                  | <b>iv</b>   |
| <b>KATA PENGANTAR.....</b>                        | <b>v</b>    |
| <b>MOTTO .....</b>                                | <b>vii</b>  |
| <b>DAFTAR ISI.....</b>                            | <b>viii</b> |
| <b>DAFTAR GAMBAR.....</b>                         | <b>x</b>    |
| <b>DAFTAR TABEL .....</b>                         | <b>xi</b>   |
| <b>INTISARI.....</b>                              | <b>xii</b>  |
| <b>ABSTRACT.....</b>                              | <b>xiii</b> |
| <b>BAB I PENDAHULUAN.....</b>                     | <b>1</b>    |
| 1.1 Latar Belakang .....                          | 1           |
| 1.2 Rumusan Masalah .....                         | 2           |
| 1.3 Tujuan dan Manfaat.....                       | 3           |
| 1.4 Batasan Masalah.....                          | 3           |
| 1.5 Sistematika Penulisan.....                    | 4           |
| <b>BAB II DASAR TEORI.....</b>                    | <b>6</b>    |
| 2.1 Tinjauan Pustaka .....                        | 6           |
| 2.2 Dasar Teori.....                              | 8           |
| 2.2.1 Suhu .....                                  | 8           |
| 2.2.2 Kelembaban.....                             | 8           |
| 2.2.3 Internet of Things (IoT) .....              | 9           |
| 2.2.4 Telur Ayam Kampung .....                    | 9           |
| 2.2.5 Sensor PIR.....                             | 11          |
| 2.2.6 Sensor DHT22.....                           | 12          |
| 2.2.7 Arduino UNO R3 .....                        | 13          |
| 2.2.8 ESP8266 (NodeMCU) .....                     | 14          |
| 2.2.9 Motor DC .....                              | 14          |
| 2.2.10 Pemanas Induksi .....                      | 15          |
| 2.2.11 LCD ( <i>Liquid Crystal Display</i> )..... | 16          |
| 2.2.12 Catu Daya Cadangan (Aki Kering 12V) .....  | 16          |
| 2.2.13 <i>Charger</i> Aki Otomatis.....           | 16          |
| 2.2.14 BLNYK .....                                | 17          |
| 2.2.15 Kesalahan/Error.....                       | 17          |
| 2.2.16 Akurasi.....                               | 17          |
| 2.2.17 Presisi.....                               | 18          |
| 2.2.18 Ketidakpastian <i>Repeatability</i> .....  | 19          |
| 2.2.19 Ketidakpastian Daya Baca .....             | 19          |
| 2.2.20 Ketidakpastian Standar Gabungan.....       | 19          |
| <b>BAB III METODE PENELITIAN.....</b>             | <b>21</b>   |
| 3.1 Alat dan Bahan.....                           | 21          |
| 3.2 Langkah Penelitian.....                       | 22          |
| 3.3 Prinsip Kerja Alat.....                       | 24          |
| 3.3.1 Blok Diagram Alat.....                      | 24          |
| 3.3.2 <i>Flowchart</i> Sistem Kerja Alat .....    | 25          |

|                            |  |           |
|----------------------------|--|-----------|
| 3.4                        | Perancangan <i>Hardware</i> .....                        | 26        |
| 3.4.1                      | Perancangan Sensor DHT22 pada Arduino UNO R3 .....       | 29        |
| 3.4.2                      | Perancangan Sensor PIR pada Arduino UNO R3 .....         | 30        |
| 3.4.3                      | Perancangan Push Button Switch pada Arduino UNO R3 ..... | 31        |
| 3.4.4                      | Perancangan Relay pada Arduino UNO R3.....               | 32        |
| 3.5                        | Perancangan Software .....                               | 33        |
| 3.6                        | Pengujian .....  | 34        |
| 3.6.1                      | Pengujian Sensor DHT22 .....                             | 34        |
| 3.6.2                      | Pengujian Sensor PIR .....                               | 35        |
| 3.6.3                      | Pengujian Motor Penggerak.....                           | 35        |
| 3.6.4                      | Pengujian BLYNK .....                                    | 36        |
| 3.6.5                      | Pengujian Sistem Alat Penetas Telur Otomatis.....        | 36        |
| 3.6.6                      | Pengujian Penetasan Telur.....                           | 37        |
| <b>BAB IV</b>              | <b>HASIL PENELITIAN DAN PEMBAHASAN.....</b>              | <b>39</b> |
| 4.1                        | Implementasi Perangkat Keras ( <i>Hardware</i> ) .....   | 39        |
| 4.2                        | Pengujian dan Hasil .....                                | 40        |
| 4.2.1                      | Pengujian Sensor DHT22 .....                             | 40        |
| 4.2.2                      | Pengujian Sistem Alat.....                               | 42        |
| 4.2.3                      | Pengujian Penetasan Telur.....                           | 43        |
| <b>BAB V</b>               | <b>KESIMPULAN DAN SARAN.....</b>                         | <b>46</b> |
| 5.1                        | Kesimpulan .....   | 46        |
| 5.2                        | Saran .....  | 46        |
| <b>DAFTAR PUSTAKA.....</b> |  | <b>47</b> |
| <b>LAMPIRAN.....</b>       |  | <b>49</b> |