**Data Tables:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Operation** | **M** | **A** | **B** | **C4** | **S4 S3 S2 S1** |
| 7 + 5 | 0 | 0111 | 0101 | 0 | 1100 |
| 4 + 6 | 0 | 0100 | 0110 | 0 | 1010 |
| 9 + 11 | 0 | 1001 | 1011 | 1 | 0100 |
| 15 + 15 | 0 | 1111 | 1111 | 1 | 1110 |
| 7 – 5 | 1 | 0111 | 0101 | 1 | 0010 |
| 4 – 6 | 1 | 0100 | 0110 | 1 | 1110 |
| 11 – 2 | 1 | 1011 | 0010 | 1 | 1001 |
| 15 – 15 | 1 | 1111 | 1111 | 1 | 0001 |

**F.1 Experimental Data (Binary Adder-Subtractor):**

**~~F.2 Experimental Data (Ripple-Through-Carry Adder):~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Operation~~** | **~~A~~** | **~~B~~** | ~~Overflow Carry~~ | **~~Sum~~** |
| ~~7 + 5~~ |  |  |  |  |
| ~~18 + 19~~ |  |  |  |  |
| ~~72 + 83~~ |  |  |  |  |
| ~~129 + 255~~ |  |  |  |  |

**Table F.2.1**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Decimal Value |  | B | inary Sum | |  |  |  | BCD SUM |  |  |
| K | Z3 | Z2 | Z1 | Z0 | C | S3 | S2 | S1 | S0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 5 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 7 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 8 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 10 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 11 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| 12 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 13 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 14 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 15 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| 16 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| 17 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 18 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 19 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |

**F.3 Experimental Data (BCD Adder):**

**Table F.3.1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Operation** | **A**  (In Binary) | **B**  (In Binary) | **Overflow Carry** | **Sum**  (In Binary) | **SUM**  **(**Decimal**)** |
| 9 + 0 | 1001 | 0000 | 0 | 1001 | 9 |
| 9 + 1 | 1001 | 0001 | 1 | 0000 | 0 |
| 9 + 2 | 1001 | 0010 | 1 | 0001 | 1 |
| 9 + 3 | 1001 | 0011 | 1 | 0010 | 2 |
| 9 + 4 | 1001 | 0100 | 1 | 0011 | 3 |
| 9 + 5 | 1001 | 0101 | 1 | 0100 | 4 |
| 9 + 6 | 1001 | 0110 | 1 | 0101 | 5 |
| 9 + 7 | 1001 | 0111 | 1 | 0110 | 6 |
| 9 + 8 | 1001 | 1000 | 1 | 0111 | 7 |
| 9 + 9 | 1001 | 1001 | 1 | 1000 | 8 |

**Table F.3.2**