STATE UNIVERSITY OF NEW YORK
AGRICULTURAL AND TECHNICAL COLLEGE
CANTON, NEW YORK

ELECTRONIC CIRCUITS

LABORATORY NOTEBOOK
DATA RECORDING
GUIDELINES

1. LEAVE ONE PAGE FOR TABLE OF CONTENTS. (NOTE 2)

2. ENTER: DATE, EXPERIMENT TITLE, LABORATORY AND EXPERIMENT NUMBER, GROUP MEMBERS, EQUIPMENT AND SEMICONDUCTOR DEVICE LIST AND NUMBERS, COMPONENT BIN NUMBER AND COLOR CODE.

3. NOTE ANY INTERCHANGE OF METERS, INSTRUMENTS, SEMICONDUCTOR DEVICES AND COMPONENTS.

4. NEAT FREE HAND SKETCHES OF ALL CIRCUIT DIAGRAMS.

5. DATE - SET UP DATA TABLE.

6. CURVES - USE GRID OR TAPE IN CURVE SHEET. INCLUDE TITLE AND LABEL COORDINATES.

7. CALCULATIONS - DEFINE SYMBOLS, REFERENCE EQUATIONS.

8. RESULTS - USE DATA TO ANSWER QUESTIONS AND COMPLETE SENTENCES. (OPTIONAL)

NOTES: 1. HAVE CIRCUIT APPROVED BY THE INSTRUCTOR BEFORE APPLYING POWER.

2. TABLE OF CONTENTS COLUMN FORMAT: LABORATORY NUMBER, EXPERIMENT TITLE AND NUMBER, PAGE NUMBER.

I-4
ELECTRONIC CIRCUITS APPARATUS

3 SECTIONS

1. Equipment List: Model No., Mfg Name, Equipment Name, Serial No.

2. Components and Hardware (except Integrated Circuits and Transistors): Resistors (Value, Wattage), Diode IN XXXX, LED, DIP Switches, Bread Board

3. Integrated Circuits and Transistors: Full Description (Functional) of Each I.C. Transistor Industry Part Number, Type (Bipolar-NPN, Junction Field, N-Channel). Example Entry

<table>
<thead>
<tr>
<th>Industry Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 2N3904</td>
<td>NPN Bipolar Transistor</td>
</tr>
<tr>
<td>2. MPF-102</td>
<td>N-Channel Junction Field Effect Transistor</td>
</tr>
<tr>
<td>3. LM324</td>
<td>Low Power Quad Operational Amplifier</td>
</tr>
<tr>
<td>4. LF351</td>
<td>Wide Bandwidth JFET Input Operational Amplifier</td>
</tr>
</tbody>
</table>

I-4.1
LAB. NO. 3
EXP. NO. 5 (LAB. MAN.: DIGITAL CKTS 304 360)

DATE: 9-16-88
BENCH #1
ROOM NN-122

TITLE: TTL TO XYZ LOGIC TRANSLATOR CIRCUITS
NAME: ANN GATES
GROUP MEMBER: ORVILLE KNOTT

EQUIP. LIST

<table>
<thead>
<tr>
<th>MFG + MODEL#</th>
<th>TYPE</th>
<th>I/O #</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLUKE MODEL 77</td>
<td>DMM</td>
<td>EL-12</td>
</tr>
<tr>
<td>RSR. MODEL 610B</td>
<td>LOGIC PROBE</td>
<td>246810</td>
</tr>
<tr>
<td>RSR. MODEL 620</td>
<td>LOGIC PULSER</td>
<td>12345</td>
</tr>
<tr>
<td>HEATHKITSIP27/8</td>
<td>TRIPLE PWR.</td>
<td>IP-2</td>
</tr>
<tr>
<td>GLOBAL SPEC. #10</td>
<td>PROTOBOARD</td>
<td>WC-20</td>
</tr>
</tbody>
</table>

ELECTRONIC COMPONENTS

- IC's: 7407 HEX BUFFER, OPEN COLLECTOR;
  74LS04 HEX INVERTER
- VARIOUS RESISTORS 1/4WATT: 1K, 4.7K, 470-R
- DIP SWITCH
- RED LED'S (NO I.D.)
- GREEN

I-5
LAB. NO. 3 CONT.

1. TTL (0,5 VOLTS) TO XYZ (0,10 VOLTS) TRANSLATOR - NO INVERSION

![Circuit Diagram]

POWER SUPPLY CONNECTIONS:
P.S. HEATHKIT IP-2718

5V "A" SET AT 15VDC

JUMPER (BLACK) FIG. 2

DATA

<table>
<thead>
<tr>
<th>STATUS OF DIP SWITCH</th>
<th>VOLTAGES AT PIN 1</th>
<th>BINARY VALUES AT PIN 1</th>
<th>BINARY VALUES AT PIN 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN</td>
<td>5V, 9.8V</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CLOSED</td>
<td>5V, 9.8V</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

VOID - BAO DATA TTL XYZ DIP SWITCH NOT GROUNDED

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1. CONT

<table>
<thead>
<tr>
<th>STATUS OF DIP SWITCH</th>
<th>VOLTAGES AT PIN#1</th>
<th>VOLTAGES AT PIN#2</th>
<th>BINARY VALUES AT PIN#1</th>
<th>BINARY VALUES AT PIN#2</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN</td>
<td>5V</td>
<td>9.8V</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CLOSED</td>
<td>0V</td>
<td>1.2V</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

2. TTL TO XYZ WITH LOGIC INVERSION AND DISPLAY

![TTL to XYZ circuit diagram]

Fig. 3.

DATA

<table>
<thead>
<tr>
<th>STATUS OF DIP SWITCH</th>
<th>VOLTAGES AT A</th>
<th>VOLTAGES AT B</th>
<th>VOLTAGES AT C</th>
<th>BINARY LED</th>
<th>GRN LED</th>
<th>RED LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN</td>
<td>5V</td>
<td>3.5V</td>
<td>1.2V</td>
<td>1</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>CLOSED</td>
<td>0V</td>
<td>4.1V</td>
<td>9.8V</td>
<td>0</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

3. CHECK 2. (Fig. 3) WITH LOGIC PROBE + PULSER → REMOVE RI AND DIP SWITCH

![Logic probe and pulser diagram]

Fig. 4. SIMPLIFIED DIAGRAM FOR FIG. 3

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COMPLETED 9/18/88 A. GATES