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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Program: Bachelor of Science Honours (Information Technology) | | | | | | | Semester: I | | | |
| Course: Electronics & Communication Technology I LAB | | | | | | | Code: | | | |
| Teaching Scheme | | | | | Evaluation Scheme | | | | | |
| Lecture | Practical | Tutorial | | Credits | Theory | | | | Practical | |
| Internal | External | | | Internal | External |
| Nil | 15X2 | Nil | | 01 | Nil | Nil | | | 20 | 30 |
|  | | | | | | | | | | |
| Internal Component | | | | | | | | | | |
| Machine Test Duration Mins | | | Assignment& projects | | | | | Class Participation | | |
| 30 Marks 2.5 Hours | | | 20 Marks Mini Project | | | | | Nil | | |
|  | | | | | | | | | | |
| Pedagogy   * PPTs, Case studies, Group discussions, Classroom Activity, Videos, Research papers, News articles etc. | | | | | | | | | | |

**List of Practical**

**1. Study of Basic Logic gates and their ICs:**

a. Study of AND, OR, NOT

b. 7408,7432,7404

**2. Study of Universal gates and their ICs:**

a. NAND and NOR

b. 7400, 7402

**3. Study of XOR and XNOR (7486,74266)**

**4. Universality of NAND**

**5. Universality of NOR**

6. **Implement the given Boolean expressions using minimum number of gates.**

a. Implement other given expressions using minimum number of gates.

b. Implement other given expressions using minimum number of ICs.

**7. Verifying De Morgan’s laws.**

8. **Implement combinational circuits.**

Design and implement combinational circuit based on the problem given and minimizing using K-maps.

9. **Implement code converters.**

a. Design and implement Binary – to – Gray code converter.

b. Design and implement Gray – to – Binary code converter.

c. Design and implement Binary – to – BCD code converter

d. Design and implement Binary – to – XS-3 code converter

10. **Implement Adder and Subtractor Arithmetic circuits.**

a. Design and implement Half adder and Full adder.

b. Design and implement BCD adder.

c. Design and implement XS – 3 adder.

d. Design and implement binary subtractor.

e. Design and implement BCD subtractor.

f. Design and implement XS – 3 subtractor.

**11. Implement Encode and Decoder and Multiplexer and Demultiplexers.**

a. Design and implement 8:3 encoder.

b. Design and implement 3:8 decoder.

c. Design and implement 4:1 multiplexer. Study of IC 74153, 74157

d. Design and implement 1:4 demultiplexer. Study of IC 74139

e. Implement the given expression using IC 74151 8:1 multiplexer.

f. Implement the given expression using IC 74138 3:8 decoder.

**12. Study of flip-flops and counters.**

a. Study of IC 7473.

b. Study of IC 7474.

c. Study of IC 7476.

d. Conversion of Flip-flops.

e. Design of 3-bit synchronous counter using 7473 and required gates.

f. Design of 3-bit ripple counter using IC 7473.