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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 |
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| Pedagogy* PPTs, Case studies, Group discussions, Classroom Activity, Videos, Research papers, News articles etc.
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**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.