L131- DIGITAL ELECTRONICS LAB

CYCLE 1

1. a) Basic Gates Function Verification using truth tables.

i) AND Gate using 7408 IC

ii) OR Gate using 7432 IC

iii) NOT Gate using 7404 IC

b) Universal Gates Functional Verification

i) NAND Gate using 7400 IC

ii) NOR Gate using 7402 IC

c) Special Gates Functional verification

i) XOR Gate using 7486 IC

ii) XNOR Gate using XOR followed by NOT Gate

2. Realization of following gates using universal gates and its functional verification.

AND, OR, XOR, NOT

3. a) Design Half-adder and Full-adder circuits and verify its functionality.

b) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.

4. Design a four bit comparator and verify its functionality (using logic gates or IC's)

5. Design a BCD to Excess-3 code converter and verify its functionality by using gates.

6. Design a BCD to Gray code converter and verify its functionality by using gates.

7. Design and verify the functionality of Decoders and multiplexers of different inputs.

CYCLE 2

8. Verify the functionality of following Flip-Flops.

a) SR Flip-Flop

b) JK Flip-Flop

c) D Flip-Flop

d) T Flip-Flop

9. a) Design a UP-Counter using JK/T Flip-Flop.

b) Design a MOD-3 Counter.

10. Design a Bi-directional Counter using JK/T Flip-Flop.

CYCLE 3

11. **IC555 Timer** – Astable Operations – Monostable Operations

12. PCB Drawing Techniques

13. Project