



R18 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech III Semester Supplementary Examinations, March/April 2023

Subject code:2P3DB

DIGITAL LOGIC DESIGN (Electronics and Communication Engineering)

Maximum Marks: 70

Date:29.03.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 What is Gray code?
- 2 Which gates are called as the universal gates? What are its advantages?
- 3 Define Pair, Quad, and Octet.
- 4 Define encoder.
- 5 Draw Latch circuit.
- 6 What is Flip-flop?
- 7 Write the function of Shift Registers?
- 8 Define RAM.
- 9 What is state diagram?
- 10 List the capabilities of finite state machine.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 What are the Universal Gates? Convert NOT function to Universal Gates? [10M]
OR
- 12 A. Represent the decimal number 3452 in i) BCD ii) Excess-3 [5M]
B. Explain the Properties of XOR. [5M]
- 13 Reduce the function $f(A,B,C) = \sum m(0,2,4,5,6)$ using K-Map? [10M]
OR
- 14 Implement the following Boolean function using 8:1 multiplexer
 $F(A,B,C,D) = \sum m(0,1,2,5,7,8,9,14,15)$ [10M]
- 15 A. Compare combinational and sequential circuits. [5M]
B. Draw and explain the operation of D Flip-Flop. [5M]
OR
- 16 A. Explain the Race around condition in flip-flops in detail. [5M]
B. Draw and explain the operation of the Master Slave JK flip-flops. [5M]

- 17 A. Explain the Universal shift register with neat diagrams. [5M]
B. What are the different types of ROM and explain briefly. [5M]
OR
- 18 A. Write the differences between synchronous and asynchronous counters. [5M]
B. Explain the process of Realization of switching functions using PLD's. [5M]
- 19 Draw the diagram of Mealy type FSM and explain with an example. [10M]
OR
- 20 Explain the procedure for state minimization using the partition technique. [10M]