R17 Regulation *Subject code:* 1P4DA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Year II Semester Supplementary Examinations, July 2021

SWITCHING THEORY AND LOGIC DESIGN

(Electronics and Communication Engineering)

Maximum Marks: 70 Date:18.07.2021 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 Convert $(124.213)_{10}$ to Octal.
2 Write the truth table of AND,OR and NOT gate.
3 Define the Combinational circuit.
4 Draw the Truth table for Half adder.
5 Differentiate between Latch and Flip-flop.
6 Draw the truth table of T-Flip-flop.
7 Define Binary ripple counter.
8 Compare RAM and ROM.
9 State the Mealy machine.
10 Define FSM.

Part-B

Answer All the following questions. **(10MX 5=50Marks)**

11 A. Convert $(6547)_8$ to Hexadecimal and $(5EC)_{16}$ to Octal. (5M)
B. Draw the AND gate using both Universal gates and write down it's truth table. (5M)

OR

12 A. Express F=x'y+xz' as a Product of Sum(POS) terms and also construct its truth table. (5M)
B. Construct logic circuit using NOT, AND & OR gates for function F=x'+xy'+xyz' (5M)

13 Obtain the simplified expression in POS (product of sums) of $F(w,x,y,z)=\pi(1,2,4,6,12,13,14)$ using K-maps. (10M)

OR

14 A. Explain the operation of Decoder with one example. (5M)
B. Construct the 16:1 Multiplexer using 2:1 Multipler. (5M)

15 Explain the operation of SR Latch with its logic circuit and Truth and Function table. (10M)

OR

16 How will you convert JK-Flip-flop into T-Flip flop? (10M)

17 a) Explain the operation of SISO Shift Register with its circuit diagram. (5M)
b) Explain the Universal shift register with suitable example. (5M)

OR

18 Explain memories used in digital system i) RAM ii) ROM iii)EPROM iv)EEPROM (10M)

19 Explain briefly how to obtain the State table and the characteristic equation for T-Flip-flop from its truth table and State diagram. (10M)

OR

20 Explain about Mealy machine with neat circuit diagram. (10M)