



R18 regulation

**TKR COLLEGE OF ENGINEERING AND TECHNOLOGY**

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

Subject code : 2P3EC

**B.Tech III Semester Supplementary Examinations July 2022**  
**DIGITAL LOGIC DESIGN**

(CSE)

Maximum Marks: 70

Date:23.07.2022 Duration: 3 hours

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Why number systems is need?
- 2 Draw the OR gate function using Universal NAND gate.
- 3 When don't care conditions used?
- 4 Define multiplexer?
- 5 Give the D-Flip flop state diagram.
- 6 What is sequential logic circuit?
- 7 What is Accumulator?
- 8 What is assembler?
- 9 Define Dynamic RAM.
- 10 Why PAL required?

Part-B

Answer all the following questions.

(10M X 5=50Marks)

- 11 a) What are the various logic gates, give the representation along with the truth table.  
b) What is the use of complements? Perform subtraction using 7's complement for the given Base-7 numbers (565)-(666). [5+5]

OR

- 12 Convert the following to the corresponding bases. [10]

i)  $(9BCD)_{16} = ( )_8$       ii)  $(323)_4 = ( )_5$

- 13 Obtain the simplified expression for the following Boolean functions. [5+5]

a)  $F(A,B,C,D) = \sum(2,3,12,13,14,15)$       b)  $F(A,B,C,D) = \pi(0,1,2,3,4,10,11)$

OR

- 14 a) Design a 2 bit magnitude comparator.  
b) Implement  $4*16$  decoder using two  $3*8$  decoders. [5+5]

- 15 a) Explain a right shift register.  
b) Design a 3-bit Ripple counter. [5+5]

OR

- 16 Explain the working of : i) J-K flip-flop ii) S-R flip-flop
- 17 Explain about analysis of sequential circuit using JK Flip-flop.[10]

OR

- 18 List out the assembler directives and explain in detail.[10]
- 19 What is memory decoding? Explain about the construction of  $4 X 4$  RAM? [10]

OR

- 20 a) Explain different types ROMs.  
b) Implement the following Boolean functions using PLA with 3 AND gates.

$F1(ABC) = \sum(3,5,7)$ ,  $F2 = \sum(4,5,7)$ . [5+5]