

NETTUR TECHNICAL TRAINING FOUNDATION
DIPLOMA IN MECHATRONICS ENGINEERING & SMART FACTORY-CP15
III SEMESTER REGULAR & SUPPLEMENTARY EXAMINATION-JAN 2023

Subject: Digital Electronics
Subject Code: CP15301T

Total Time: 2 Hr.
Total Marks: 50 Marks

PART B

1.0 ANSWER ANY EIGHT OF THE FOLLOWING **2*8=16**

- 1.1 Define the following terms related to pulse waveforms
a) Frequency b) Time Period
- 1.2 How many no. of bits, nibbles, bytes are there in the given binary data (1011 0101)?
- 1.3 What are universal gates why are they called so?
- 1.4 List the rules of Boolean algebra
- 1.5 Draw the logic symbol and truth table for Half Adder
- 1.6 Define Multiplexer. Draw the block diagram of Multiplexer.
- 1.7 Differentiate between Flip-flop & Latches.
- 1.8 Define Modulus of Counters.
- 1.9 Define Data Conversion. List the types of Data Converters.
- 1.10 What are the different names of Johnson Counter?

2.0 ANSWER ANY SIX OF THE FOLLOWING **3*6=18**

- 2.1 Explain the working of BJT as a switch with neat diagram
- 2.2 Convert the given BCD number (0011 0001) to Binary number
- 2.3 Classify the logic gates.
- 2.4 Minimize the given 3-variable SoP expression using K Map

$$Y = A\bar{B}C + \bar{A}\bar{B}C + \bar{A}BC + A\bar{B}\bar{C} + \bar{A}\bar{B}\bar{C}$$

- 2.5 Draw the logic circuit for 1-bit Comparator & write the truth table for the same
- 2.6 Define Multivibrator. List the modes of operation of IC 555 Timer
- 2.7 Define triggering & what are the types of triggering?
- 2.8 Differentiate between Binary Weighted DAC & R-2R Ladder DAC.

3.0 ANSWER ANY FOUR OF THE FOLLOWING **4*4=16**

- 3.1 Differentiate between Asynchronous Counters & Synchronous Counters
- 3.2 Explain the working of MOD-10 Ripple Up Counter
- 3.3 Explain the working of successive approximation type of ADC with neat sketch
- 3.4 Draw the logic circuit for CMOS based NAND & NOR Logic Gates.
- 3.5 Explain the working of 4-bit SISO Shift Register with neat diagram.
- 3.6 Explain how JK Flip-flop is converted into T Flip-flop

