# FIRST TERM EXAMINATION 2021

STD. XII

**ELECTRONICS-1I**

Max. Marks: 50 Time: 3 Hrs.

**Instructions: 1.All questions are compulsory.**

 **2. Draw neat diagrams wherever necessary.**

 **3. Figures to the right indicate full marks.**

 **4. Use of log table is allowed.**

Q 1 (A) Select correct alternative & rewrite the complete sentence: (4)

 1)The count of 4 bit binary down counter is 0000, when a clock pulses applied then its next counter will be \_\_\_\_\_\_\_\_\_

 a) 0001 b) 1111 c) 0010 d )1110

2) A two input EX-OR gate gives high output \_\_\_\_\_\_\_\_\_\_.

 a) When both the inputs are zero.

 b) When both the inputs are one.

 c) When any input is low authority.

 d) When both the output are low.

3) 2’s compliment of binary number is equal to \_\_\_\_\_\_\_\_.

 a) Complement of binary number.

 b) Complement of binary number +1.

 c) Complement of binary number -1.

 d) Binary number +2.

4) A 5 bit weighted resistor digital to analog converter uses 1.6 kΩ resistor for LSB, the value of resistor used for MSB is \_\_\_\_\_\_\_\_\_\_

 a) 100Ω b) 160Ω c) 25.6Ω d) 8.10 kΩ

 Q1 (B) Attempt any two of the following : (6)

 1) Explain double dabble method with suitable example.

 2) Subtract the following numbers by 2’s complement method.

 1) $(11011)\_{2}$ -$ (101)\_{2}$ 2) $(10111)\_{2}$ – $(11101)\_{2}$

 3) Draw clocked R-S Flip-flop and explain its working.

Q2 (A) Attempt any two of the following: (6)

 1) State and prove Demorgan’s theorem and draw necessary diagram.

 2) Explain half adder with logic diagram and the truth table.

 3) Explain the working of 1:4 De-multiplxer with the help of logic diagram and truth table.

Q-2)B) Attempt any one of the following : (4)

 1)Convert the following.

 1) (2A5.0A) 16 = ( )2 2) (1101110)2 = ( )10

 3) (78.78) 2 = ( )16  4) (101.101)2 = ( )10

 2)Explain Hex dabble method with example.

Q-3)A) Attempt any two of the following : (6)

1) With the help of neat diagram explain the working of TTL NAND gate.

2) Explain the following characteristics of digital IC’S

a) Noise Margin b) Propagation Delay c)Figure of Merit

3)Draw and explain J-K Flip-flop with the truth table.

Q-3)B) Attempt any one of the following : (4)

1) Why NAND gate is called universal building block? Construct basic gate using NAND gate.

2) Explain how EX-OR gate is used as controlled inverter. Draw a logic diagram of 4 bit controlled inverter and explain its working.

Q-4) Attempt any two of the following: (6)

 1)Write a note on multiplxers. State the advantages of multiplexers.

 2)Implement the expression using a multiplexers.

 f(A,B,C,D) = ΣM (0,1,2,5,6,10,12,13)

 3)Implement the following multi-output

 F1 = ΣM (1, 3, 2, 4, 6, 8, 10)

 F2 = ΣM (6, 8, 11, 14)

 F3 = ΣM (4, 8, 13, 14)

Q-4)B) Attempt any one of the following : (4)

1)Draw block diagram of computer and explain each block.

2)List any four input and output devices of computer with their uses.

Q-5)A) Attempt any two of the following : (6)

 1) Draw a logic diagram of decade counter.Explain the use of decoding gate.

2) Explain the use of simultaneous A/D converter.

3) Explain the working of decimal to BCD encoder using 4 OR gates.

Q-5)B) Attempt any one of the following : (4)

1) With the help of neat diagram ,explain the working of TTL NOR Gate.

2) What will be the output voltage in R-2R ladder for binary input 1001,1010 and 1011?

 **OR**

Q-5)A) Attempt any two of the following : (6)

1) Explain need of A/D and D/A conversion .give examples.

2) How many flipflops are required to construct each of the following counters MOD-3,MOD-6,MOD-0?

3) Realize the logic function of the truth table given below

|  |  |
| --- | --- |
| INPUT | OUTPUT |
| A | B | C |  Y |
| 0 | 0 | 0 | 1 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 |

Q-5)B) Attempt any one of the following : (4)

1. For given 3T flip-flops, if output to fist flip-flop is 1.2 kHz of square wave, What will be the output frequency of final flip-flop.
2. Implement the following expression using MUX.

