6234

BOARD DIPLOMA EXAMINATIONS

OCT/NOV-2019

DECE – THIRD SEMESTER

DIGITAL ELECTRONICS

Time:3 hours   Max. Marks: 80

PART – A   **3 X 10 = 30**

Instructions: 1.   *Answer **all** questions.*
2.   *Each question carries **Three** Marks.*
3.   *Answer should be brief and straight to the point and should not exceed five simple sentences.*

1.   Convert the following decimal numbers into binary numbers.

   i) $(52.6)_{10} = ($ $)_2$ ii) $(26.14)_{10} = ($ $)_2$

2.   Write Excess-3 code for a decimal number 82.

3.   Subtract 101.11 from 1101.1 using 2's complement method.

4.   Define the terms a) Propagation delay b) Noise margin of digital ICs.

5.   Draw Full adder circuit using two Half-adders and an OR gate.

6.   Mention any three applications of multiplexers.

7.   State the need for preset and clear inputs of flip flops.

8.   Draw the circuit of 4-big ring counter.

9.   Draw the symbols of T and D Flip-flops and write their truth tables.

10.   Compare static RAM and dynamic RAM.

[cont..,

PART – B   10 X 5 = 50

Instructions: 1. *Answer any **Five** questions*
                 2. *Each question carries **TEN** Marks.*
                 3. *Answer should be comprehensive and Criteria forValuation is the content but not the length of the answer.*

11. Using Boolean laws, simplify the following expressions and

     Realize it by using logic gates.

     i) Y= AB + A(B+C) + B(B+C)   ii) Y= $(A+B)(A+\bar{B})(\bar{A}+C)$ 5+5M

12. a) Explain the working of an Ex-OR gate using truth table.   6M

     b) State De-Morgan's theorems.   4M

13. Explain the working of open collector TTL NAND gate with

     circuit diagram   5+5M

14. Draw full-adder circuit using basic gates and explain its operation

     with truth table.   4+3+3M

15. Explain the working of BCD to Decimal decoder.   5+5M

16. Explain master slave JK flip-flop with necessary diagrams and

     truth table.   4+4+2M

17. Draw and explain the working of 4-bit synchronous counter.

18. Draw and explain the working of 4-bit bi-directional shift register.

                                                                          5+5M