BSc DEGREE EXAMINATION MAY 2017
(Third Semester)

Branch- **ELECTRONICS**

DIGITAL PRINCIPLES & APPLICATIONS

Time : Three Hours   Maximum : 75 Marks

SECTION-A *(20 Marks)*
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (10x2 = 20)

1   What is the base of following number systems?
     i) Binary ii) Hexadecimal
2   Find the Gray code equivalent for the following binary codes.
      i) 11001101 ii) 10101010
3   Draw the logic symbol and truth table of EX-NOR gate.
4   i) A + A = ? ii) A. 1 = ?   *
5   What is a multiplexer?
6   Perform the following addition 101101 + 111100.
7   What is a counter?
8   Draw the truth table of D- flipflop.
9   Mention the major advantage and disadvantage of successive approximation ADC.
10   Define the accuracy of a DAC.

SECTION - B (25 Marks!
Answer **ALL** Questions .
ALL Questions Carry **EQUAL** Marks (5x5 = 25)

11   a Explain decimal to hexadecimal conversion with an example.
                              OR
     b Explain BCD and Excess-3 codes with suitable examples.

12   a Draw the logic symbol and truth tables for the following logic gates.
          i) OR ii) EX.OR iii) NOR iv) AND v) NAND.
                              OR
     b State and prove DeMorgan's theorem.

13   a Explain the function of a half subtractor.
                              OR
     b Draw the logic diagram of a 1- to - 4 demultiplexer and explain its functions.

14   a Describe the functionality of a D-flipflop.
                              OR
     b Explain the working of a 4-bit ring counter.

15 a   Draw the circuit of a 4-bit weighted resistor D/A converter and explain its working.
                              OR
     b Explain simultaneous A/D conversion method.

SECTION - C (30 Marks)
Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3x10 = 30)

16   Perform the following conversions:
        a) $(349)_{io}$ =   (b)$(ACB4)_{16}$=   (c)$(1476)_g$ = d) $(1011101101)_2$ =
17   Minimize the following logic function using k-map
     $f(A,B,C,D) = \Sigma m (2, 3, 7, 10, 11, 14) + d (1,5,15)$
18   Perform die following subtractions using 2's complement arithmetic,
     a) (34)-(29)   (b) (41)-(53)
19   Explain the operation of a 4-bit binary ripple counter.
20   Draw the logic diagram of a dual slope A/D converter and explain its operation.

Z.Z-Z   FMD