Seat No. : _____

NG2-119

December-2015

FY M.Sc., (CA & IT)

Fundamental of Computer Organization

Time : 3 Hours] **[Max. Marks : 100**

1. (a) Do as Directed : **14**

   (1) $(1001.1001)_2 =$ _____$_{10}$

   (2) $(2AB)_{16} =$ _____$_8$

   (3) $(56231.96)_{10} =$ _____$_{16}$

   (4) Add the binary number 10111,0111 and 1101.

   (5) Subtract 101001 – 1010

   (6) Multiply 1011.01 by 101.01

   (7) Subtract 101010 – 111100 (using 2's complement method)

   (b) Explain floating point representation. Represent the number $(-17)_{10}$ as floating point Binary Number with 32 bits. **6**

2. (a) Reduce the Boolean Simplification : **8**

   (1) AB+A(CD+CD')

   (2) F=X'Y'Z'+X'YZ'+XY'Z'+XYZ'

   (3) F(A,B,C,D)=Σ(3,5,6,11,13,15)

   (4) A+BC=(A+B)(A+C)

   (b) Answer the following : **12**

   (1) What is Gate ? Explain Universal gate with example.

   (2) State and prove the De Morgan's theorem using truth table and logical diagram.

   (3) Draw EX-OR Gate with the help of only NAND Gate.

3. Write short notes : (any **four**) **20**

(1) Construction of ALU

(2) Decimal to BCD Encoder

(3) Integrated Circuit

(4) The 4 to 1-line Multiplexer

(5) Binary Adder-Sub-tractor

4. Answer the following : **20**

(1) Explain Address, Data and Control Bus.

(2) How many types of Scanner ? Explain any one.

(3) Define Memory Hierarchy. Explain ROM.

(4) Explain DMA controller.

5. (a) State the differences : **12**

(1) Combinational circuits and Sequential circuits

(2) Asynchronous counter and Synchronous counter

(3) A Half Adder and A Full Adder

(b) Minimize the following expression : **8**

(1) Reduce the expression $f=\Sigma m(1,5,6,12,13,14)+d(2,4)$ and implement the expression in universal logic.

(2) Reduce the expression $f=\pi M(2,8,9,10,11,12,14)$ and implement the real minimal expression in universal logic.

———————