 LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**M.Sc.** DEGREE EXAMINATION - **PHYSICS**

FIRST SEMESTER – **NOVEMBER 2012**

# PH 1819 - ELECTRONICS AND PROGRAMMING

Date : 07/11/2012 Dept. No. Max. : 100 Marks

Time : 1:00 - 4:00

Part – A

Answer **ALL** Questions: (10x2=20)

1. Explain the significance of the offset null adjustment in Op-amps.
2. Obtain an expression for the gain of an Op-amp based inverting amplifier
3. Write a note on the buses of μP8088.
4. Develop a program segment for μP8086 to complement the contents of memory locations with offsets 100h to 200h with respect to DS.
5. Develop a program for μP8086 to convert a two digit unpacked BCD number in AX to packed BCD format in AL.
6. If AL contains 2FH and CL contains 03H, what will be the contents of AL after (i) SHL AL,CL and (ii) ROL AL,CL.
7. Write a note on the ALE signal of μP8086.
8. State the differences between the LEA and LDS instructions of μP8086.
9. Write a note on the relational operators of C++.
10. Write a C++ program to input an integer and print whether it is divisible by 3.

# Part – B

Answer any **FOUR** Questions (4x7.5=30)

1. Sketch a neat circuit diagram of an Op-amp based 8 level parallel A/D converter and explain it’s working in detail
2. Discuss the conditional and unconditional branch instructions of μP8086.
3. Develop an ASM program for μP8086 to set a byte variable LY if a word variable N represents a leap year. (Hint: A leap year is divisible by 4 and not by 64h).
4. Develop an ASM program for μP8086 to sort a word array in descending order.
5. Write a C++ program to print all prime numbers between 10 and 100.

# Part – C

Answer any **FOUR** Questions (4x12.5=50)

1. Sketch a neat circuit diagram of an Op-amp based 4 bits successive approximation register A/D converter and explain it’s working in detail.
2. DPX and DPY are 32 bit unsigned numbers. Develop an ASM program for μP8086 to find the product and store the result at DPZ. DPX, DPY and DPZ are word variables.
3. Develop an ASM program for 8086 to solve, , by defining a procedure for cube. Use relative indexed mode of addressing for data.
4. With a block diagram explain in detail the functioning of the interrupt controller 8259A. Also explain how two 8259As may be cascaded to act as master and slave. (8.5+4).
5. Write a C++ program to input the elements of two 3x3 integer matrices and print the product matrix.