



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION - PHYSICS

FIRST SEMESTER – APRIL 2013

PH 1819 - ELECTRONICS AND PROGRAMMING

Date : 03/05/2013
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

Part – A

Answer ALL Questions.

(10x2=20)

1. List any four properties of an ideal operational amplifier.
2. Obtain an expression for the gain of an Op-amp based non inverting amplifier
3. List any two architectural differences between μP8088 and μP8086 .
4. Develop a program segment for μP8086 to store 00h at memory locations with offsets 100h to 150h with respect to ES.
5. Develop a program for μP8086 to convert a two digit unpacked BCD number in AX to packed BCD format in AL.
6. If AH contains 12H and CL contains F9H, what will be the status of the conditional flags after (i) ADD AH,CL and (ii) XOR AH,CL.
7. Write a note on the $\overline{\text{MIN}}/\overline{\text{MAX}}$ signal of μP8086 .
8. State the differences between the LEA and LDS instructions of μP8086 .
9. Write a note on the logical operators of C++.
10. Write a C++ program to input an integer and print whether it represents a leap year.

Part – B

Answer any FOUR Questions.

(4x7.5=30)

11. Sketch a neat circuit diagram of an Op-amp based 4 bits binary weighted ladder D/A converter and explain its working in detail.
12. Illustrate with two sample instructions for each, the various addressing modes of data in μP8086 .
13. Develop an ASM program for μP8086 to set a byte variable PN if a byte variable N represents a prime number.
14. Develop an ASM program for μP8086 to sort a byte array in ascending order.
15. Write a C++ program to print the first 100 elements of the Fibonacci series starting from 1.

Part – C

Answer any FOUR Questions.

(4x12.5=50)

16. Solve using Op-amps, $\frac{d^2v}{dt^2} + B\frac{dv}{dt} + cv - v_1(t) = 0$.
17. DPX and DPY are 48 bit and 16 bit unsigned numbers respectively. Develop an ASM program for μ P8086 to find the product and store the result at DPZ. DPX, DPY and DPZ are word variables.
18. Develop an ASM program for μ P8086 to copy an array to an overlapping area.
19. Write a note on the DMA controller. With a neat diagram explain the events which take place during DMA transfer using BUS stealing. (8.5+4)
20. Write a C++ program to input the elements of two 3x3 integer matrices and print the product matrix 