LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **PHYSICS**

FIRST SEMESTER – **NOVEMBER 2014**

PH 1819 - ELECTRONICS AND PROGRAMMING

Date : 06/11/2014 Dept. No. Max. : 100 Marks

Time : 01:00-04:00

Part – A

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

1. Explain with a neat circuit, how an op-amp may be used as a comparator.
2. Derive an expression for the output voltage of an Op-amp based differentiator.
3. With a suitable example distinguish between the LOOP and the LLOPE instructions ofμP8086.
4. Develop a program segment for μP8086 to add 05to all memory locations with effective address 1000H to 1100H with respect to DS. Use LOOP instruction.
5. Develop a program for μP8086 to reverse a two digit packed BCD number in AL.
6. Develop a program for μP8086 to set all the conditional flags.
7. Write a note on the $\overline{MN}/\overline{MX}$ signal of μP8086.
8. Define a macro which returns through AL the factorialof a number passed through BH.
9. Distinguish between, DO{….}While() and the While(){..} constructsof C++.
10. Write a C++ program to input an integer and print the factorial of the number.

Part – B

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

11. Sketch a neat circuit diagram of a 10 level parallel A/D convertor and explain it's working in detail
12. Explain in detail all the string primitives ofμP8086
13. Develop an ASM program for μP8086 to sort a byte array in ascending order.
14. Develop an ASM program for μP8086 to find the number of lowercase alphabets in a byte array.
15. Develop a single module, two segment ASM program for μP8086 to solve, $a = b! + c! - d!$, by defining a procedure for square root.
16. Write a C++ program toinput a string of alphanumeric characters, toggle the case of alphabets and to print the final string.

Part – C

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

17. Solve using Op-amps, x+y=1.3 and 2x-3y=-0.6
18. DPX and DPY are 32-bit unsigned numbers. Develop an ASM program for μP8086 to find the product and store the result at DPZ. Assume DPX, DPY and DPZ to be word variables.
19. Develop an ASM program for μP8086 to copy an array to an overlapping area.
20. With a block diagram discuss bus buffering and latching in μP8086 operated in maximum mode.
21. Write a note on the DMA controller. With a neat diagram explain the events which take place during DMA transfer using BUS stealing. (4+8.5)
22. Write a C++ program to input the elements of two 4x4 integer matrices and print the product matrix.

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