LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – NOVEMBER 2016

16PPH1MC03 / PH 1819 - ELECTRONICS AND PROGRAMMING

Date: 07-11-2016 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

Part – A

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

1. List any four properties of an ideal operational amplifier.
2. With a neat circuit diagram explain the working of an Op-amp base integrator.
3. Taking a suitable example, explain how the physical address is calculated using the segment and effective addresses in μP8086.
4. Develop a program for μP8086 to divide a two digit packed BCD number by a single digit BCD number.
5. Develop a program for μP8086 to find the factorial of a byte using the LOOP instruction.
6. Develop a program segment for μP8086 to complement all the elements of a byte array.
7. Explain how an EQU statement is different from a DB statement of ASM86.
8. What is the role played by the PUBLIC and EXTRN statements of ASM86.
9. Discuss the relational operators of C++.
10. Develop a C++ program to print all numbers divisible by 7 between 1 and 100.

Part – B

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

11. Solve using Op-amps, x+y=2 and x-y=1. Explain the working of the circuit in detail.
12. Illustrate with an example for each, the various string primitives available in μP8086.
13. Develop an ASM86 program to convert a two digit packed BCD number in memory to binary format and store it in memory.
14. Write an ASM program for μP8086 to sort a byte array in ascending order.
15. Explain with a block diagram the sequence of events that take place when a maskable interrupt of μP8086 occurs and the subsequent return.
16. 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)**

17. With a neat circuit diagram, explain the working of a sucsessive approximation based A/D convertor.
18. Develop an ASM program for 8086 to solve q = a! + b! - c!, by defining a procedure for factorial. Use register relative mode of addressing for data.
19. Develop an ASM program for μP8086 to reverse a byte array without using any other array.
20. With a block diagram discuss bus buffering and latching in μP8086 operated in maximum mode.
21. With a block diagram explain the functioning of the interrupt controller 8259A. Also explain how two 8259As may be cascaded to act as master and slave. **(6.5+6).**
22. Develop a 'C++' program to accept an array of integers, to sort the array and display the sorted array, using one function to initialize the array, another to sort it and another to display the sorted array.

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