LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – NOVEMBER 2015

PH 1819 - ELECTRONICS AND PROGRAMMING

Date : 07/11/2015   Dept. No.   Max. : 100 Marks
Time : 01:00-04:00

Part – A

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

1. List any four properties of an ideal operational amplifier.

2. Obtain an expression for the gain of an op-amp based inverting amplifier.

3. Explain the role of the mod field in an operational code of μP8086.

4. Develop a program for μP8086 to convert a two digit packed BCD number in AL to unpacked format in AX.

5. Write a program for μP8086 to divide a word in memory by a byte and store the results in memory. Use memory direct mode of addressing.

6. Develop a program segment for μP 8086 to complement all the elements of a byte array.

7. Give a program segment to clear all the status flags of μP8086.

8. What is the role played by the PUBLIC and EXTRN statements of ASM86?

9. Discuss the logical operators of C++.

10. Illustrate with suitable example, the difference between passing by vale and passing by reference.

Part – B

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

11. Sketch a neat circuit diagram of an Op-amp based 4 bits binary weighted ladder D/A converter and explain it's working in detail.

12. Illustrate with an example for each, the various string primitives available in μP8086.

13. 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.

14. Write an ASM program for μP8086 to sort a byte array in ascending order.

15. With a neat circuit diagram, explain how priority may be assigned using Daisy Chain.

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 marks)**

17. With a neat circuit diagram, explain the working of a binary counter based A/D convertor.

18. DPX and DPY are 32-bit and 16 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 a program for 8086 to capitalise all lower case alphabets and also find how many times '5' occurs in a byte array ARY1.

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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