LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – **APRIL 2014**

PH 2810 - MICROPROCESSOR & MICRO CONTROLLERS

Date : 28/03/2014   Dept. No.   Max. : 100 Marks
Time : 09:00-12:00

Part – A

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

1. Write a note on the PSW of μP8086.

2. Explain when the queue of μP8086 will get flushed.

3. Develop a program segment for μP8086 to complement the content of memory locations with offsets 100h with respect to ES.

4. Write a note on 'REG' field in the instructions of μP8086.

5. Develop a program for μP8086 to exchange the nibbles of the number in AL.

6. Write a note on the $DT/\bar{R}$ signal of μP8086.

7. Define a macro which stores in AX the square of a number in AL.

8. State the differences between the LOOP and LOOPNE instructions.

9. Write a note on the stack pointer of μC8051.

10. Develop a program for μC8051 to exchange the contents of R7 of Bank0 and R1 of Bank1.

Part – B

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

11. Two byte arrays hold the marks scored by n students in Mechanics and Optics respectively. If a student has scored 50 or above in both the subjects, the result for the student should stored as a '1' in the third array, indicating promotion. Otherwise a '0' should be stored in the third array. Develop an ASM program for μP8086.

12. Develop an ASM86 program to convert a two digit packed BCD number in memory to binary format and store it in memory.

13. Develop an ASM program for µP8086 to exchange the contents of two byte arrays.

14. With a block diagram discuss bus buffering and latching in µP8086 operated in maximum mode.

15. With a neat diagram, discuss the internal architecture of µC8051.

Part – C

<u>Answer any **FOUR.**</u>   (4x12.5=50)

16. Develop an ASM program for 8086 to solve $a = \sqrt{b} + \sqrt{c} - \sqrt{d}$, by defining a procedure for square root. Use relative indexed mode of addressing for data.

17. Develop a suitable interface and program for 8086 to implement 8-bit A/D conversion with 8086 simulating a binary counter.

18. Develop an ASM program for µP8086 to sort a byte array in ascending order.

19. Explain with neat block diagrams, the process states and the implementation of the ready queue in iRMX86.

20. Eight LEDs and a switch are connected to the Ports P2 and P3 of µC8051. Develop an ASM program to make the LEDs glow in binary descending order if the switch is ON and all LEDs to blink if the switch is ON.

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