LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION - **PHYSICS**

FIRST SEMESTER – **APRIL 2013**

PH 1813 - ELECTRONICS

Date : 30/04/2013   Dept. No.   Max. : 100 Marks
Time : 9:00 - 12:00

Part – A

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

1. Explain the concept of the virtual ground in an Op-amp.

2. With a neat circuit diagram obtain the expression for the output for an Op-amp based inverting amplifier.

3. Explain the function of DAD instruction of µP8085.

4. Develop a program segment for µP8085 to evaluate the square root of a number stored in memory.

5. Illustrate with a suitable example the stack activity of µP8085 during a CALL instruction.

6. Develop a macro for µP8085 which stores in A, the square root of the number in B.

7. Write notes on the ALE signal of µP 8085.

8. Develop a program segment for µP8085 to mask RST4.5 and RST6.5.

9. Write a note on the R register of µP Z80.

10. Explain the use of the alternate registers of µP Z80.

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 it's working in detail.

12. With a neat diagram, explain in detail the internal architecture of µP8085.

13. Develop a program for µP8085 to find the largest of an array of n bytes in memory.

14. If the crystal frequency is 1MHz, develop a program for µP8085 to generate a square wave at
2 KHz in the SOD line.

15. Write a note on the various branch instructions available in µPZ80.

Part – C

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

16. With a neat circuit diagram, explain how Op-amps may be used to solve the equations, x + y = 2 and x – y = 0.5.

17. Develop a program for µP 8085 to solve $a! + b! - c!$ with a subroutine for calculating the factorial.

18. Eight LEDs are connected to an output port PA and a switch to the LSB of an input port PB. Develop an ASM program for µP 8085 to make the LEDs glow in binary ascending order if the switch is ON else make alternate LEDs blink.

19. Develop an interface and program for µP8085 to implement an 8 bits counter based A/D conversion.

20. Develop programs for Z80 to input from a port PA, 80 bytes and store them in consecutive memory locations (i) using block manipulating instructions and (ii) without using block manipulating instructions.

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