LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – **NOVEMBER 2013**

PH 1813 - ELECTRONICS

Date : 08/11/2013 Dept. No. Max. : 100 Marks

Time : 1:00 - 4:00

Part – A

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

1. Obtain an expression for the output of an Op-amp based non inverting amplifier.
2. With circuit diagram, explain the working of an Op-amp unity gain buffer.
3. Write a short note on the PSW of µP8085.
4. Write a program for µP8085 to find the factorial of a number in memory.
5. List any four single instructions which will each clear the register 'A' of µP8085.
6. Discuss the S0 and S1 signals of µP8085.
7. Illustrate with a suitable example the stack activity during a return from a subroutine.
8. Explain the role of the alternate registers of Z80.
9. With a suitable example illustrate the OUT instructions of Z80.
10. State the advantage of relative branching available in Z80 over absolute branching.

Part – B

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

11. With neat circuit diagrams, explain the working of Op-amp based differentiator and integrator.
12. Develop a program for µP8085 to multiply two 8 bit numbers available at memory locations 8100h and 8101h and to store the 16 bit product at 8200h and 8201h.
13. With timing diagram explain the machine cycle for STA 8100 of µP8085.
14. Explain the sequence of events that take place in the event of INTR becoming active.
15. Explain the various data addressing modes available in Z80 with an example each.

Part – C

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

16. With a neat circuit diagram explain how the simultaneous equations, $x + 2y = 2$ and $x - y = 0.1$ can be solved using Op-amps?
17. Develop a program for µP8085 to solve ${}^{n1}C_{r1} + {}^{n2}C_{r2}$. Use a subroutine for factorial.
18. Develop a program for µP8085 to,
    (a) find the square root of an 8 bit number available in memory location 8100h, and to store the result at 8102h using memory direct mode of addressing. (6.5)
    (b) find the number of 1s in an 8 bit number available at 8100h and to store the result at 8101h using memory indirect mode of addressing. (6)
19. Develop an interface and program for µP 8085 to implement an 8 bits successive approximation A/D converter
20. Develop a program for Z80 to sort an array of 80h elements with a starting address of 8100h in ascending order.

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