LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – NOVEMBER 2011

PH 1813/1808 - ELECTRONICS

Date : 03-11-2011   Dept. No. [   ]   Max. : 100 Marks
Time : 1:00 - 4:00

PART – A

Answer **ALL** the questions   (10 X 2 = 20)

1. State any four characteristics of an ideal Op-amp.
2. Obtain an expression for the gain of an Op-amp based inverting amplifier.
3. Write a note on the various flags available in 8085.
4. Distinguish between the instructions LXI H,1000H and LHLD 1000H of 8085.
5. Develop a program for 8085 to generate a square wave at the SOD line.
6. Illustrate with a suitable example the stack activity during a CALL instruction.
7. Develop an ASM program for 8085 to accept a byte from an input port with address 41H and disable the interrupts if MSB of the received byte is 0.
8. What is the role of the READY line of 8085?
9. State the advantage of relative branching available in Z80 over absolute branching.
10. Write a note on any two Bit manipulating instructions of Z80.

PART – B

Answer any **FOUR** questions   (4 X 7.5 =30)

11. With neat circuit diagrams, explain the working of Op-amp based differentiator and integrator. Also obtain expressions for the outputs.
12. Develop a program for 8085 to find the cube root of an 8 bit number available in memory using memory indirect mode of addressing of data.
13. With timing diagram, explain the instruction cycle for LXI H, 34BAH.
14. Develop an ASM program for 8085 to transmit an array of 40H bytes in memory in a serial manner through SOD line without handshaking. Let the time between transmissions of successive bits be 10ms. The crystal frequency is 1 MHz.
15. Explain the various data addressing modes available in Z80 with an example each.

PART – C

Answer any **FOUR** questions   (4 X 12.5 =50)

16. (a) With neat circuit diagrams explain how an Op-amp may be used as i) an Integrator and ii) a differentiator.   (3+3)
    (b) Also Solve the simultaneous equations, x + y =2 and 2x - y = 1 using Op-amps.   (6.5)
17. Develop a program for 8085 to solve $^{n1}C_{r1} - ^{n2}C_{r2}$. Use a subroutine for factorial. Use memory direct mode of addressing for data.
18. Develop an interface and program for 8085 to simulate an 8 bits binary counter based A/D converter.
19. Develop an ISS6.5 corresponding to RST6.5 of 8085, to reverse an array with a starting address of 8001h. The number of elements in the array is at 8000H.
20. Develop ASM programs for Z80 to (a) replace all 'a' by 'A' in an array of ABH elements and
    (b) sort an array of 80H elements   (6 + 6.5)

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