LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – NOVEMBER 2016

PH 1808 - ELECTRONICS – I / PH 1813 ELECTRONICS

Date: 02-11-2016 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

Part – A

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

1. State any four characteristics of an ideal operational amplifier.
2. Draw the circuit diagram of an Integrator using an operational amplifier.
3. Develop a program segment for µP8085 to add two 8 bit numbers in memory and to store the 9 bit sum back in memory.
4. Write a program for µP8085 to calculate the factorial of a number in 'A' register.
5. Illustrate with a suitable example the stack activity of µP8085 during a CALL.
6. Distinguish between the instructions LXI H,1000h and LHLD 1000h of µP8085.
7. What is the role of the $IO/\overline{M}$ line of µP8085.
8. Develop a program segment to mask RST7.5 and to reset pending RST7.5 of µP8085.
9. Explain the role of the alternate registers of µP Z80.
10. Write a note on the DJNZ instruction of Z80.

Part – B

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

11. Solve using Op-amps the simultaneous equations, 2X + 3Y = 5 and X + Y = 2.
12. Explain the various data addressing modes available in µP8085 with an example each.
13. With timing diagram, explain the instruction cycle for LXI H, 34BAh.
14. Develop a program segment for µP8085 clocked by a 100KHz. crystal to generate a delay of 100ms.
15. Write a note on the various control signals of µP8085.
16. Develop a program segment for Z80 to find how many times 55h occurs in an array of 80h elements.

Part – C

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

17. (a) Integrators are preferred to differentiators in analog computer applications. Justify. (b) Solve using Op-amps, $\frac{d^2v}{dt^2} + B\frac{dv}{dt} + cv - v_1(t) = 0$ (2.5+10).

18. Develop a program for μP8085 to solve ${}^{n1}C_{r1} - {}^{n2}C_{r2}$. Use a subroutine for factorial.

19. Develop an interface and program for μP8085 to simulate an 8 bits binary counter based A/D converter.

20. Explain with timing diagram, the sequence of events which take place when a maskable interrupt occurs and during its subsequent return in μP8085.

21. Write a note on the various hardware and software interrupts available in μP8085.

22. With an example each, explain the various modes of addressing of data and branching in Z80.

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