LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – **APRIL 2016**

PH 1813 - ELECTRONICS

Date: 28-04-2016 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

Part – A

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

1. Explain the significance of the offset null adjustment in Op-amps.
2. Define the resolution of an A/D converter.
3. What is the role of the TEMP register of µP 8085.
4. Write a program for µP8085 to determine the square root of a byte in memory.
5. Develop a program for µP8085 to complement memory locations 5000h to 5050h.
6. Write a subroutine for µP8085 which returns through A, the factorial of a byte passed through B.
7. Write notes on the ALE signal of µP8085.
8. Develop a program segment for µP8085 to clear all pending RSTn interrupts.
9. State the advantages of relative branching available in Z80 over absolute branching.
10. Explain the use of the refresh register of µP Z80.

Part – B

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

11. Explain the significance of virtual ground in an op-amp based inverting amplifier and derive an expression for the voltage gain.
12. With an example for each, explain all branch and call instructions of µP8085.
13. Explain the memory mapped I/O and the I/O mapped I/O schemes in µP8085 and discuss the various instructions associated with them.
14. Write notes on the software and hardware interrupts available in µP8085.
15. Illustrate with an example for each, all modes of addressing of data in µP Z80.

Part – C

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

16. With a neat circuit diagram, explain how Op-amps may be used to solve second order differential equations.
17. Write a program for µP8085 to solve ${}^{n1}C_{r1}$ - ${}^{n2}C_{r2}$. Use a subroutine for factorial.
18. Develop a program for µP8085 to generate 500Hz using the SOD line whenever the LSB of an input port PA is in 1 state. The crystal frequency is 3 M.Hz.
19. Explain with timing diagram, the sequence of events which take place when a maskable interrupt occurs and during its subsequent return in µP8085.
20. Develop ASM programs for Z80 to (a) replace all 22h by 2Ah in a byte array of 80h elements and (b) sort a byte array of 80h elements. **(6 + 6.5)**

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