



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – PHYSICS

FIRST SEMESTER – APRIL 2017

PH 1813- ELECTRONICS

Date: 03-05-2017
09:00-12:00

Dept. No.

Max. : 100 Marks

Part – A

Answer ALL Questions.

(10x2=20)

1. With a neat circuit diagram obtain an expression for the output of an Op-amp based integrator.
2. In an Op-amp based inverting amplifier, the feedback and input resistors are 100KΩ and 5 KΩ respectively. If the input voltage is 1 mv, what will be the output voltage?
3. Write a short note on the PSW of μP8085.
4. State the functional difference between LDA and STA instructions of μP8085.
5. List any four single instructions of μP8085 which clears the accumulator.
6. Develop a program segment for μP8085 to complement 80h memory locations.
7. Write notes on the ALE signal of μP8085.
8. With an example, explain the role of SIM instruction of μP8085.
9. Write a note on the refresh register of μP Z80.
10. Explain the use of the IX and IY 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 its working in detail.
12. With 2 sample instructions for each, explain all the addressing modes of data in μP8085.
13. Develop a program for μP8085 to multiply two 8 bit numbers in memory and to store the 16 bit product in memory using memory direct mode of addressing.
14. If the crystal frequency of an 8085 system is 1 MHz., calculate the delay generated by the following segment of code.

MVI A,50H; REPT: DCR A; JNZ REPT
15. Write a note on the various branch instructions available in μPZ80.

Part – C

Answer any FOUR Questions.

(4x12.5=50)

16. (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)
17. Develop a program for μP8085 to solve $\sqrt{a} + \sqrt{b} + \sqrt{c} - d^2 - e^2$. Use a subroutine for square root. Assume the data to be in memory
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 μP8085 to make the LEDs glow in binary descending order if the switch is ON else make alternate LEDs blink.
19. With timing diagrams explain the status of the various signals during (i) Op. code fetch, (ii) Memory read and (iii) memory write machine cycles. (4.5+4+4)
20. Develop a program for Z80 to sort in ascending order an array of 3DH bytes in memory.