



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – PHYSICS

FIRST SEMESTER – APRIL 2014

PH 1819 - ELECTRONICS AND PROGRAMMING

Date : 04/04/2014
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

Part – A

Answer ALL Questions.

(10x2=20)

1. How does the OP-AMP function as a comparator?
2. What is meant by input offset voltage and output offset voltage?
3. Write a brief note on the Control bus of μ P8086.
4. Develop a program segment for μ P8086 to fill a byte array ARY, with packed BCD numbers 99 to 00 in descending order.
5. Develop a program for μ P8086 to reverse a two digit packed BCD number in AL.
6. Develop a program segment for μ P8086 to clear all the flags in PSW.
7. Write a brief note on the *MIN/INT* signal of μ P8086.
8. Write a brief note on the *REPE* prefix of μ P8086.
9. What is an array? Explain one and two dimensional arrays with example.
10. Write a program in C++ to find the number of even numbers in an array of 20 numbers.

Part – B

Answer any FOUR Questions.

(4x7.5=30)

11. Discuss with a neat block diagram, the working of successive approximation A/D converter.
12. Explain the role of the MOD, REG and the R/M fields in the instruction of μ P8086.
13. Develop an ASM program for μ P8086 to calculate the element wise product of two arrays of n bytes each and store the product in a third array.
14. Explain with a block diagram the sequence of events that take place when a maskable interrupt of μ P8086 occurs and the subsequent return.
15. Write a program in C++ to multiply two 3x3 matrices.

Part – C

Answer any FOUR Questions.

(4x12.5=50)

16. a) Give the circuit diagram to solve the simultaneous equations $2x+y = 3$ and $x-y=3$ (6)
- b) Solve the given differential equation $\frac{d^2 y}{dt^2} + 2\frac{dy}{dt} + 3y = 5$ using OP-AMPs. (6.5)
17. DPX and DPY are 48 and 32 bit unsigned numbers respectively. Develop an ASM program for μ P8086 to find the product and store the result at DPZ. DPX, DPY and DPZ are word variables.

18. An 8 bit A/D converter with a temperature transducer is connected to μ P8086 through ports. Develop an ASM module to collect temperature data every 10 minutes for one hour and store it in memory.
19. Write a note on the DMA controller. With a neat diagram explain the events which take place during DMA transfer using BUS stealing.
(4+8.5)
20. Write a program in C++ to solve $\int_0^5 \frac{dx}{4x+5}$ using a) Simpson's 1/3 rule and b) Trapezoidal rule. 