

**B.TECH. DEGREE EXAMINATION, DECEMBER 2012****Seventh Semester**

Branch : Electronics and Communication Engineering / Applied Electronics and Instrumentation

MICROCONTROLLER BASED SYSTEM DESIGN (LA)

(Regular/Supplementary/Mercy Chance)

Time : Three Hours

Maximum : 100 Marks

**Part A***Answer all questions briefly.**Each question carries 4 marks.*

1. What are the advantage offered by FPGA based system design?
2. Explain the steps used for implementing combinational circuit using PLA?
3. How do you set the highest priority for serial interrupt?
4. What are the interrupt sources available in 89C251? Are there any interrupts that cannot be disabled?
5. Explain the merits and demerits of flash converter over the dual slope converter.
6. List and briefly describe any four specifications of a DAC.
7. Describe the RS232 standard?
8. Draw the timing diagram of MOV [SI], AL instruction.
9. Explain the use of DS1232 watch dog timer.
10. Explain how the power factor can be measured using the timers of 89C51?

(10 × 4 = 40 marks)

**Part B***Answer any one full question from each module.**Each full question carries 12 marks.***MODULE I**

11. Draw the structure of  $3 \times 4 \times 2$  PLA structure. Explain its working and applications?

*Or*

12. With neat diagram explain FPGA architecture? How FPGA is classified? Give examples.

**Turn over**

## MODULE II

13. With neat circuit diagram, explain how a 7 segment LED display can be interfaced with 89C 2051?

*Or*

14. Explain the special features of 89C 2051. Also describe how memory space is divided into many groups with the help of a neat sketch?

## MODULE III

15. With neat diagrams, explain the working of a sigma delta converter? Compare its performance with dual slope converter?

*Or*

16. With a neat circuit diagram, explain the optically isolated triac interface to 89C51? Explain the assembly program for the above interface?

## MODULE IV

17. Describe the RS 485 standard, clearly explaining the various data and control signals.

*Or*

18. Explain the 3 wire serial EEPROM interface with the microcontroller with the help of necessary diagrams. Compare it with 2 wire system?

## MODULE V

19. With the help of neat circuit diagram and assembly language program, describe how the stepper motor is interfaced with microcontroller?

*Or*

20. Give the features of L293 motor driver? With neat circuit, show how it can be used with the microcontroller?

(5 × 12 = 60 marks)