



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

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

**SECOND SEMESTER – APRIL 2014**

**PH 2814 - EMBEDDED SYSTEMS**

Date : 28/03/2014  
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

**Part – A**

Answer ALL Questions.

(10x2=20)

1. Explain how the various register banks may be selected in  $\mu\text{C8051}$ .
2. Discuss the bit addressable registers of  $\mu\text{C8051}$ .
3. Write a note on the MOVX instruction of  $\mu\text{C8051}$ .
4. Develop a program segment for  $\mu\text{C8051}$  to find the square of the number in R3 of bank 1 and to store it in R3 of bank 2.
5. Explain the function of the instruction ADDWF 15h, 0 of PIC.
6. Write down the instruction to transfer the contents of WREG to PORTA.
7. With an example explain the use of the ORG assembler directive.
8. Write notes on the 3-stage pipeline of ARM7 processors.
9. What must be the alignment of instructions in THUMB state? Why?.
10. Write a program segment for ARM to disable all external interrupts.

**Part – B**

Answer any FOUR.

(4x7.5=30)

11. Discuss in detail the SFRs of  $\mu\text{C8051}$ .
12. With an example each, explain the various addressing modes of data of  $\mu\text{C8051}$ .
13. List any six specific features of the RISC PIC processors.
14. Write notes on the interrupts of LPC2148.
15. Write notes on the peripheral devices available in LPC2148

**Part - C**

Answer any **FOUR**.

(4x12.5=50)

16. Develop an interface and an ASM program for  $\mu$ C8051 to implement data acquisition using an 8 bit A/D converter using an external interrupt for EOC.
17. With a detailed block diagram, explain the internal architecture of PIC16 series microcontroller.
18. Develop an interface and program for PIC to record the temperature of a furnace continuously at regular intervals of time and sound an alarm if the temperature exceeds 90° C.
19. A buzzer is connected to P0.0, an LED to P0.1 and a switch to P0.2 of LPC2148. Develop a complete ASM program to sound an alarm and to turn the LED off if the switch is off and to turn the LED on and turn off the alarm if the switch is on.
20. With an example for each, discuss the modes of addressing available in THUMB state of ARM7 processors.

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