



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

**M.Sc.DEGREE EXAMINATION – PHYSICS**

SECOND SEMESTER – APRIL 2018

**17/16/PH 2814 PPH2MC01- EMBEDDED SYSTEMS**

Date: 17-04-2018  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**Part – A**

Answer **ALL** questions

(10x2=20)

1. Write a note on the conditional flags of  $\mu\text{C8051}$ .
2. What is the reset value of the Stack Pointer of  $\mu\text{C8051}$ .
3. With a suitable instruction, explain indexed mode of addressing in  $\mu\text{C8051}$ .
4. Explain the role of TCON register in  $\mu\text{C8051}$ .
5. List all the interrupts available in  $\mu\text{C8051}$ .
6. Write down the instruction to transfer the contents of WREG to PORTA.
7. Develop a program segment for PIC to toggle the bits of PORTA continuously.
8. Write a note on the Barrel Shifter of ARM7 processors.
9. Write a note on the 3-stage pipeline of ARM7 processors.
10. Explain why instructions must be word aligned in ARM state.

**Part – B**

Answer any **FOUR** questions

(4x7.5=30)

11. Write notes on all branch Instructions of  $\mu\text{C8051}$ .
12. Develop an interface and an ASM program to generate left to right rolling pattern in 8 LEDs connected to port P0.
13. With neat diagrams, explain the program memory organisation of PIC16F877A.
14. Write notes on any seven Arithmetic or Logical instructions of PIC.
15. Discuss the role of the various bits in the program status register of ARM7.
16. State seven salient features of the load/store architecture of ARM7 processors.

**Part – C**

Answer any **FOUR** questions

(4x12.5=50)

17. Develop an ASM program for  $\mu\text{C8051}$  to copy a byte array of 20h elements in external Data RAM from address 4000h to internal data RAM from address 40h.

18. A  $\mu$ C8051 microcontroller is connected serially to an IBM PC. The crystal frequency is 11.0952 MHz.  
Develop an ASM program to repeatedly send "GOOD MORNING" to the PC
19. Discuss the on-chip peripheral and analog features of PIC16F877A processor.
20. With an example for each, explain any twelve instructions which operate on fileReg operand.
21. With a detailed block diagram, explain the internal architecture of LPC2148 processor.
22. 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 sound an alarm and turn the LED off if the switch is off and turn the LED on and turn off the alarm if the switch is on.

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