LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – **NOVEMBER 2016**

PH 2814 – EMBEDDED SYSTEMS

Date: 11-11-2016   Dept. No.   Max. : 100 Marks
Time: 01:00-04:00

Part – A

Answer **ALL** questions.   (10x2=20)

1. State the role of the flags in the PSW of μC8051.

2. Develop a program for μC8051 to find the factorial of the byte in R1 of bank1 and store it in R2 of bank2.

3. Write a note on the DPTR register of μC8051.

4. Explain how Port0 is different from the other ports of μC8051.

5. State the differences between mode1 and mode2 of timer in μC8051.

6. Write a note on the Status Register of PIC.

7. Sate the role of the assembler directive RADIX.

8. Explain the role of the "lr" register of ARM7 processors.

9. In ARM7 family, what does the acronym TDMI represent?.

10. What must be the alignment of instructions in THUMB state? Why?.

Part – B

Answer any **FOUR** questions**.**   (4x7.5=30)

11. Discuss the memory organisation in μC8051.

12. Write notes on all the program branching instructions of μC8051.

13. List any six specific features of the PIC processors.

14. Write notes on the interrupts of PIC16 series.

15. Discuss the role of the various bits in the program status register of ARM7.

16. List all possible conditional suffixes in ARM7 along with the flags being tested.

Part – C

Answer any **FOUR** questions**.**   (4x12.5=50)

17. Develop an ASM program to generate 10 KHz in P0.0 of μC8051 using timer0 interrupt and also to continuously transfer data from P1 to P2. The crystal frequency of the controller is 12MHz.

18. An 8051 microcontroller is connected serially to an IBM PC. Write a program for μC8051 to transfer the message "WISH YOU ALL THE BEST", stored in an array serially at 9600 baud, 8-bit data, 1 stop bit. Do this repeatedly.

19. With a detailed block diagram, explain the internal architecture of PIC18 series microcontroller.

20. In detail explain the role and functions of all the on chip peripherals of PIC 16F877.

21. Write detailed notes on the PINSEL registers of LPC2148. Also develop the code to define pin 15 as AD0.3. Functions of pin15 are, P0.30 / AD0.3 / EINT3 / CAP0.0.   (8+4.5).

22. LEDs are connected to the lower 16 bits of the port P0. A switch is connected to the MSB of P0. Develop a complete ASM program for LPC2148 to turn the LEDs on if the switch is off and turn the LEDs off if the switch is on.

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