



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – PHYSICS

SECOND SEMESTER – APRIL 2017

PH 2814- EMBEDDED SYSTEMS

Date: 06-05-2017
09:00-12:00

Dept. No.

Max. : 100 Marks

Part – A

Answer ALL questions.

(10x2=20)

1. Write a note on the PSW of μC8051 .
2. Develop a program segment for μC8051 to find the factorial of the number in R0 of bank0 and to store it in R2 of bank3.
3. Write a note on the default stack of the microcontroller μC8051 .
4. Explain how Port0 is different from other ports of μC8051 .
5. State which Timer in which mode is used for serial communication in μC8051 .
6. Write a note on the status register of 16 series of PIC processor.
7. State the functional differences between the instructions DECF and DECFSZ of PIC.
8. In ARM7 family, what does the acronym TDMI stand for?
9. State the differences between Von Neumann and Harvard architectures.
10. If r1 contains 1, what will be its content after, ADD r1, r1, LSL #3? Explain.

Part – B

Answer any FOUR questions.

(4x7.5=30)

11. With an example each, explain the various addressing modes of data in μC8051 .
12. Develop an interface and an ASM program for μC8051 to make LEDs toggle 5 times a second using timer0 interrupt. The crystal frequency is 1.2 MHz.
13. Explain the role of each bit in the INTCON register of PIC16F877A processor.
14. Write notes on all the branch instructions of PIC.
15. Discuss the instructions to manipulate the CPSR of ARM7. Also develop code to disable all the external interrupts (3+4.5).
16. With suitable examples of code, explain the difference between 'SUB' and RSB' instructions of ARM7.

Part – C

Answer any FOUR questions.

(4x12.5=50)

17. Develop an ASM program for μC8051 to find the largest of a byte array of 20h elements in external Data RAM and store the largest byte in internal RAM location 16h.
18. A μC8051 microcontroller is connected serially to an IBM PC and an 8 bits A/D convertor is connected to μC8051 . Write a program for μC8051 to collect data from A/D convertor 100 times per second and send the same to the PC serially. Do this repeatedly. Assume the crystal frequency to be 11.0952 MHz.
19. With neat diagrams, explain the program and data memory organisation of PIC16F877A.
20. In detail explain the role and functions of all the on chip peripherals of PIC 16F877.
21. With a detailed block diagram, explain the internal architecture of LPC2148 processor.
22. Develop an ASM program for LPC2148 to convert the analog signal of AD0.1 and keep sending the digital equivalent continuously to P0.0...P0.9. Give detailed comments also. (Hint: functions of Pin13 are P0.28/AD0.1/CAP0.2/MAT0.2).

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