MCA

QP Code : 3378

(3 Hours)   [Total Marks : 80]

NB:
1) Question No. 1 is compulsory.
2) Out of remaining questions, attempt any three questions.
3) In all four questions to be attempted.
4) All questions carry equal marks.
5) Answer to each new question to be started on a fresh page.
6) Figures in brackets on the right hand side indicate full marks.
7) Assume suitable data if necessary.

Q1. A) Explain Special Function Registers (SFRs) of 8051.   (5 Marks)
    B) Explain features of ARM-7 microcontroller.   (5 Marks)
    C) Explain 8051 assembler directives.   (5 Marks)
    D) Explain Digital Camera as an embedded system application.   (5 Marks)

Q2. A) For an 8051 system of 11.059MHz. Find how long it takes to execute each of the following instructions.   (10 Marks)
    a) MOV R3, #55   b) DJNZ R2, Target   c) LJMP   d)SJMP   e) MUL AB

    B) Design a microcontroller system using 8051 microcontroller, 4 Kbytes of ROM and 8 Kbytes of RAM. Interface the external memory such that the starting address of ROM IS 1000H and RAM is C000H.   (10 Marks)

Q3. A) Draw and explain data flow model of ARM-7   (10 Marks)

    B) Explain addressing modes of ARM-7   (10 Marks)

Q4. A) Explain IR communication system with basic transmitter setup.   (10 Marks)
    Write a program segment to vary speed of a DC motor using the remote transmitter keypad.

    B) Write a program for a square wave is being generated at pin P1.2. This square wave is to be sent to a receiver connected in serial form to this 8051.   (10 Marks)

Q5. A) What is stack? How stacks are accessed in 8051? Explain operations of PUSH and POP instructions with example   (10 Marks)

    B) Write a program to blink all LEDs connected to port P1 at a slow rate so that the blinking is clearly seen. Assume a frequency of 22 MHz and that the system is using the 89C51. Use a crystal of frequency 22 MHz   (10 Marks)

Q6. Write short notes on following   (20 Marks)
    A) Design metrics of embedded systems
    B) PCON and SCON registers of 8051