TE, Sem-V, Electronics, CBGS, May/15

M

QP Code : 3308

μC & Applications 25/05/15

(3 Hours) [Total Marks : 80

N.B. 1) Question no. one is compulsory
2) Solve any three from the remaining five questions.
3) Assume suitable additional data if necessary.

Q.1. Answer the following questions. (Any FIVE) (20)
a) Explain the difference between RET and RETI instructions as implemented in 8051 architecture.
b) What is the maximum address range of conditional jump instructions for 8051 architecture and justify the reason for the same.
c) Illustrate the circuit representation for interfacing single LED and relay to the port pins of 8051 architecture based processor.
d) Explain pipelining feature in ARM7TDMI architecture. Justify advantages and disadvantages.
e) Explain the significance of letters and numbers in – 'ARM7TDMI'.
f) Explain the bit orientations of CPSR register for ARM7TDMI architecture.

Q.2. a) Write a note on the various modes of operation of ARM7TDMI based processor. (10)
b) Explain the following 8051 architecture based instructions:
i) MOV C,0X10 ii) MUL AB iii) MOVC A, A+@0x2000 iv) INC 0X45
v) ANL A,@R0 (10)

Q.3. a) With a neat circuit representation illustrate interfacing of a typical 8-bit DAC to 8051 architecture based processor. Using DAC write a program in 8051 assembly to generate a triangular wave. (12)
b) Explain the programmer's model (register structure) in ARM7TDMI architecture. (08)

Q.4. a) Explain the various addressing modes with suitable examples available in 8051-architecture. (10)
b) Using internal timers write a program in 8051 assembly to generate a square wave of 10kHz frequency and 50% duty cycle on port pin P1.0. (10)

Q.5. a) Explain the following ARM7TDMI architecture based instructions as well as their implications
i) BL Square ii) ADD R0, R1, R2, LSL#3 iii) MOVEQS R1,R0
iv) LDR R8, [R3, #4] v) STR R2, [R1, #0x100] (10)
b) Write a brief note on the process of interrupts and their mechanism of acknowledgement in 8051 – architecture. (10)

Q.6. Write brief notes on
a) ARM7TDMI thumb mode of operation. (07)
b) Interfacing stepper/continuous motor to 8051 based microcontroller. (07)
c) Serial port and modes of operation in 8051 architecture. (06)
