(3 Hours)   Total Marks: 80

N.B. 1) Question **number 1** is compulsory.
   2) Attempt **any three** from remaining five questions.
   3) Assume suitable data wherever necessary.
   4) Figure to **the right** indicates full marks.

Q1. Attempt any four from the following.   (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.

Q2a) Write a note on the various modes of operation of ARM7TDMI based processor.   (10)
b) Explain the following 8051 architecture based instructions:
a) MOV C,0X10 b) MUL AB c) MOVC A, A+@0x2000 d) INC 0X45
e) ANL A,@R0   (10)

Q3 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)

Q4a) 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)

[TURN OVER

FW-Con.10936-16.

Q5)a) Explain the following ARM7TDMI architecture based instructions as well as their implications.   (10)
a) BL Square b) ADD R0, R1, R2, LSL#3 c) MOVEQS R1,R0 d) LDR R8, [R3, #4]
e) STR R2, [R1, #0x100]

b) Write a brief note on the process of interrupts and their mechanism of acknowledgement in 8051 – architecture.   (10)

Q6) 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)

_____ × _____

FW-Con.10936-16.