Time: 3 Hours **[Max Marks: 80]**

N.B.:
1. **Question No.1** is compulsory.
2. Out of the remaining five questions attempt any three questions.
3. Assume suitable data if required and state it clearly.
4. Figures in brackets to the right indicate full marks.

Q.1		Attempt **any four.**	**(20)**
	a	Difference between Harvard & Von Neumann Architecture.	**(5)**
	b	Explain in brief Classification of Memory: Primary and Secondary	**(5)**
	c	Differentiate between RISC & CISC Architecture.	**(5)**
	d	What is significance of CPSR register of ARM?	**(5)**
	e	Discuss the role of the barrel shifter in ARM7 instructions.	**(5)**
Q.2	a	Describe the role of the Memory Management Unit (MMU) in virtual memory implementation.	**(10)**
	b	Explain the concept of Direct Memory Access (DMA) in microcontroller systems, and discuss its key differences from programmed I/O.	**(10)**
Q.3	a	Draw and Explain ARM 7 Programmer's model.	**(10)**
	b	Comparison between Atmega 328P and PIC16F886	**(10)**
Q.4	a	Draw and Explain Interrupt structure of 8051 microcontroller.	**(10)**
	b	Write an assembly language program to generate a square wave of 2 kHz frequency on pin P1.5, Assume that XTAL = 11.0592 MHz.	**(10)**
Q.5	a	Write a program to transfer a block of a 10 bytes data from Internal memory location 40h to internal memory location 60h.	**(10)**
	b	Explain various addressing modes of the 8051 with two examples each.	**(10)**
Q.6			
	a	Draw and explain 5-stage pipe structure of ARM.	**(10)**
	b	What are the factors that are required to be considered for selecting a microcontroller for an application?	**(10)**
