

N.B: 1. Question number 1 is compulsory. Solve any three out of remaining.
 2. Draw neat diagrams.

- Q.1 a) Compare RISC & CISC CPU architectures. 20
 b) Sketch the Execution Unit of 8086 CPU.
 c) Explain function of the following pins of 8051.
 i) PSEN
 ii) EA
 d) Write a program for 8051 microcontrollers to find 2's complement of an 8-bit number.
 e) Explain the control word of 8255-PPI.
- Q.2 a) Draw and Explain PCON and SCON registers of 8051. 10
 b) Write a C program to toggle all 8-bits of Port 2 continuously every 500 ms. Use Timer 1, mode 1 to create the delay. Show the delay calculations. 10
 Assume XTAL = 11.0592 MHz.
- Q.3 a) Explain the various addressing modes of 8051 microcontroller. 10
 b) Explain the need for the following peripheral controllers. Also, list their features. 10
 i. 8259-PIC
 ii. 8237-DMAC.
- Q.4 a) Draw and explain interrupt structure of 8051. 10
 b) Show the design of an 8051-based system with 8K bytes of ROM and 8K bytes of RAM. Sketch the interfacing diagram and draw the memory mapping table. 10
- Q.5 a) Design 8051-based system to sense temperature using Port 1 and display the value on LCD using Port 2. Hint: Sketch only the block diagram. 15
 b) Explain memory segmentation of 8086 CPU. 05
- Q.6 a) Explain with example the following instructions: 10
 i) MOVX A, @DPTB
 ii) RLC A
 iii) POP address
 iv) RET
 v) DIV AB
 b) Compare microprocessor and microcontroller. 05
 c) Explain the power-on reset circuit. 05
