

28th May 2007

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**. Solve any **four** questions from remaining **six**.
 (2) Assume **suitable** data if **necessary** with justification.
 (3) **Figures** to the **right** indicate **full** marks.
 (4) Answers to questions should be **grouped** and written **together** .
 (5) Use **Legible** handwriting.

1. (a) Explain physical structure of I/O ports of 8051 microcontroller. 10
 (b) Interface following components to 8086 microprocessor working in minimum mode :- 10
 - (i) 16 KB EPROM memory using 2764 chip, mapped at top of memory space.
 - (ii) 16 KB application program area using 6264 chip to include IVT.
 - (iii) 2, 16 bit I/O ports using 8255 mapped at 80H onwards.

2. (a) Design 8051 based microcontroller system to meet following specifications :- 10
 - (i) 32 KB program memory using 27256 chip
 - (ii) 32 KB data memory using 61256 chip
 - (iii) 3, 8-bit I/O ports using 8255.
 (b) Assume crystal frequency of 12 MHz to 8051 microcontroller, write assembly language 10
 program to generate square wave of 1 KHz on port bit P1.0 using timer 1 interrupt.

3. (a) What are SFRs ? Explain their utility with one example. 10
 (b) Explain following instructions :- 10
 - (i) DJNZ A, BACK
 - (ii) CJNE A, # 99H, NEXT
 - (iii) XRL 32H, # 32H
 - (iv) DIV AB
 - (v) MOVC A, @A + PC.

4. What are the different multiprocessor configurations ? Explain 8086-8087 interface with neat 20
 diagram.

5. (a) Explain string instructions of 8086. Write assembly language program using string instructions 15
 to transfer 100 bytes of data from 20000 H to 21000 H.
 (b) Convert + 187.625 into short real format. 5

6. (a) Explain interrupt structure of 8086 in detail. Explain priority mechanism of interrupts . 15
 (b) Explain assembler directives, any **two** :- 5
 - (i) SEGMENT
 - (ii) PROC
 - (iii) MACRO.

7. Write short notes on any **four** :- 20
 - (a) Mixed language programming
 - (b) Addressing modes of 8086
 - (c) IEEE - 488 standard
 - (d) RS - 232 C bus standard
 - (e) Serial port of 8051.