

28th May 2007

- N.B. :**
- (1) Question No. 1 is **compulsory**.
 - (2) Attempt any **four** questions out of the remaining.
 - (3) **Figures** to the **right** indicate **full** marks.
 - (4) Assume **suitable** data if **necessary** with justification.
 - (5) Give **proper comments** to assembly language program.

1. Design an 8086 based microprocessor system with the following specifications : 20
 - (a) 8086 microprocessor working at 5 MHz.
 - (b) 8087 coprocessor for numeric calculations.
 - (c) 32 KB of EPROM using 16 KB devices.
 - (d) 128 KB of application program area using 62256 chips.
 - (e) 2 input 2 output 16-bit ports using 8255 chips in handshake mode to be addressed in fixed port address mode.

Draw the memory and I/O map. Use absolute decoding technique. Explain the design.

2. (a) With the help of neat diagrams, explain 8086-8087 interface. Highlight the important signals of the interface. 10
 - (b) Discuss control and status word format of Numeric processor 8087. 5
 - (c) Explain the following : 5
TEST, SAR, FST ST(2), FISTP, XLAT.
3. (a) Explain what is meant by bus arbitration. Mention when it is required. Explain different types of arbitration schemes. 10
 - (b) Explain with a neat diagram, use of 8289 in multiprocessor systems. 10
4. (a) Write a 8086 program to check if a string initialised in the data segment is palindrome or not. Clearly specify the comments and state the addressing mode for each instruction. 10
 - (b) Explain the various data formats supported by 8087 coprocessor and convert the decimal No. $(-67.71875)_{10}$ into short-real format. 10

5. Differentiate between : 20
 - (a) Procedure and macro.
 - (b) BIU and EU of 8086 μ p
 - (c) I/O mapped I/O and memory mapped I/O
 - (d) Programmed I/O and interrupt I/O

6. (a) With the help of neat block diagram, explain the operation of 8255 in detail. Draw the timing diagram for the modes available for group A along with BSR mode. 15
 - (b) Write an assembly language program to use 8255 as : 5
 - (i) Group A for handshake - I/P mode.
 - (ii) Group B for handshake - O/P mode.

Assume IC is just received.

7. Write short notes on any **two** :-

- (a) Master-slave configuration of 8259 interfaced with 8086.
- (b) 8254 Programmable Interval Timer.
- (c) Interrupt structure of 8086.
- (d) IEEE 488 GPIB.