T.E. (COMP-IT) Sem II (Rev) Microprocessor.
29/11/06

Con. 4638–06. (REVISED COURSE) YM–6700

(3 Hours) [Total Marks : 100

**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 co-processor for numeric calculations.
   (c) 32KB of EPROM using 16KB devices.
   (d) 128KB of Application Program Area using 62 256 chips.
   (e) 2 Input 2 output 16-bit ports using 8255 chips in handshake mode, tobe addressed in Fixed-port addressing mode.

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

   (a) Explain the following instructions : 10
   (i) XLAT (ii) RCL (iii) FISTP (iv) FCHS (v) FLDST (2).

   (b) Write a program for 8086 in assembly language to check if seting initialised in the data segment is palindrome or not. Clearly specify the comments and state the addressing mode for each instructions. 10

3. (a) Draw the flow diagram for given following sequence of events, normal priority and that EOI command must be output : 10
   (i) Request on IR 3
   (ii) Request on IR 2
   (iii) Request on IR 6
   (iv) IF reset to 1
   (v) IF reset to 1
   (vi) EOI to clear ISR 2
   (vII) EOI to clear ISR 3
   (viii) IF reset to 1
   (ix) EOI to clear ISR 6.

   (b) Draw timing diagram of INTA machine cycle of 8086 CPU working in maximum mode and explain it. 5

   (c) With respect to 8259 explain operations of the following pins :– 5
   (i) CASØ-2 (ii) $\overline{SP}$ / $\overline{EN}$ (iii) INT.

4. (a) With the help of a neat diagram, explain 8086-8087 interface. Highlight the important signals of the interface. 10

   (b) Discuss the control and status word format of Numeric Processor 8087. 5

   (c) Convert (307·1875) decimal in long real and temporary real format. 5

5. (a) What do you mean by multiprocessor system ? What are different multiprocessor configurations supported by 8086 ? Draw neat diagrams. 12

   (b) Explain with a neat diagram, use of 8289 in multiprocessor systems. 8

6. (a) Differentiate between :– 12
   (i) I/O mapped I/O and memory mapped I/O.
   (ii) Programmed I/O and Interrupt I/O.
   (iii) Mininimum and maximum mode of 8086.

   (b) Explain the concept of DMA. Explain various operating modes supported by 8237 A. 8

7. Write short notes on :– 20
   (a) Modes of 8254
   (b) 8288 Bus controller
   (c) IEEE 488 GPIB.
   (d) Interrupt structure of 8986.