

(3 Hours)

[Total Marks : 100]

- N.B. : (1) Question No. 1 is **compulsory**.  
 (2) Answer any **four** from remaining **six**.  
 (3) **Figures** to the **right** indicate marks.  
 (4) Assume **suitable** data if **necessary** and state it **clearly**.

1. Design a 8086 based microprocessor system containing the following :- 20
- CPU working at 5 MHz
  - Numeric Co-processor
  - 32 KB SRAM using 8 KB x 8 devices
  - 64 KB EPROM using 16 KB x 8 devices
  - One simple output Port
  - One input Port in handshake mode.

Write the I/O map and memory map in detail.  
 Use absolute decoding.

2. (a) Explain the instruction DAA if 8085 with an example. What are the contents of reg A 10  
 after the following program is executed ?

```

6000 : MUI A, 11 H
        MUI B, 22 H
        LXI H, 600 C H
        CALL ADDS
        ADI 33 H
        INR A
        HLT
ADDS : XTHL
        ADD B
        R E T
  
```

- (b) Write a 8085 program which upcounts from 00H to FFH with a delay of 1 sec between the counts and restarts. The counter stops at the occurrence of interrupt RST 6.5 and starts at the occurrence of next interrupt on RST 6.5, stops at the occurrence of next and so on. 10

3. (a) Draw the timing diagram for the 8085 instructions :- 8  
 (i) STAXD (ii) RSTS.

- (b) Explain the 8254 PIT with the help of its internal block diagram. Design a pulse train generator of 1 kHz with a duty cycle of 25% using 8254. Assume suitable clock frequency. Explain both hardware and software required. 12

4. (a) Explain the internal block diagram of 8255 PPI. Discuss in detail the handshake mode 10  
 of 8255.

- (b) With a neat diagram show how six 7-segment displays can be interfaced to 8085 10  
 through 8255. Write a program to display "HELLO-" on that display.

Con. 4924-CD-6072-07.

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5. (a) If (DS) = 2100 H, (SS) = 1100 H, (CS) = F000 H, (ES) = 8000 H, (BX) = 0158 H, (DI) = 10A5 H, (BP) = 2000 H, (SI) = 3050 H
- Give the physical address of data moved into AL/AX for the following instructions :-
- MOU AX, [ BX + SI ]
  - MOU AL, [ .BP + DI ]
  - MOU AX, [ BX + SI + 06 ]
- (b) Write 8086 programs -
- to find seven segment code for a BCD digit using XLAT
  - to replace the character "\$" in a string of 20 characters with character "R".
6. (a) Explain 8086 maximum mode of operation in detail.
- (b) Explain the internal block diagram of 8259 PIC. Show how 20 interrupting sources can be connected on INTR Pin of 8085.
7. Write short notes (any two) :-
- Serial data transfer in 8085
  - Assembler directives
  - DMA Controller.

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