**Con. 6764-13.** **LJ-11312**

(3 Hours) **[Total Marks : 100**

**N.B. :** (1) Question no. **1** is **compulsory**.
(2) Attempt any **four** questions out of the remaining **six** questions.

1. (a) Explain T states, Machine cycles and instruction cycles. **5**

   (b) Why address and data bus are multiplexed? Explain how they demultiplexed in 8085. **5**

   (c) Differentiate SJMP, AJMP and LJMP instructions of 8051. **5**

   (d) Write assembly language program for 8051 to read the data from port lines P1.0 to P1.3 and P2.0 to P2.3, if data are equal then send FFH to PORT 3 else OOH. **5**

2. (a) Explain interrupt structure of 8085. **10**

   (b) Explain internal memory organization of 8051 microcontroller. **10**

3. (a) Draw and explain timing diagram for instruction INR M. **10**

   (b) Draw and explain the architecture of ARM processor. **10**

4. (a) Explain the control word register format of 8253. Write assembly language program for 8085 to generate a square wave of frequency 2 KHz using 8253. Assume 8253 clock frequency is 1 MHz. **10**

   (b) Explain addressing modes of ARM processor. **10**

5. (a) Interface 8255 to 8085 using I/O mapped I/O technique. Write assembly language program to initialize 8255 as PORT A - input port, PORT B - output port in mode 1. **10**

(b) Calculate the time delay produced by the following subroutine. Assume crystal frequency of 8085 as 6 MHz. **10**

```
        PUSH PSW
        PUSH B
        LXI B, FFFDH
UP :    DCX B
        MOV A,C
        ORA B
        JNZ UP
        POP B
        POP PSW
        RET
```

6. (a) Write assembly language program to generate a reactangular waveform of frequency 1 KHz and 70% duty cycle at pin P1.1 using 8051. Assume 8051 microcontroller is operating at frequency 12 MHz. **10**

(b) Explain serial communication in 8085 system. **10**

7. Write short note on :- **20**

(a) Salient features of 89C51, 89C52, 89C2051 and 89C2052.

(b) ADC 0808 interfacing with 8051 microcontroller.

(c) PORT 1 internal structure of 8051.

(d) Memory Access instructions of ARM processor.

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