(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3087 Roll No. | | | | | | | | | | |

B.Tech.

FIFTH SEMESTER EXAMINATION, 2006-07

MICROPROCESSORS AND APPLICATIONS

Time : 3 Hours *Total Marks : 100*

Note : *(i) Attempt ALL questions.*

(ii) All questions carry equal marks.

(iii) In case of numerical problems assume data wherever not provided.

(iv) Be precise in your answer.

1. Attempt ***any four*** parts of the following : **(5x4=20)**

(a) Explain the evolution of microprocessors in brief ?

(b) What building blocks are essentially required for any microprocessor ?

(c) Why assembly language is used to program microprocessor ? What are disadvantages of microprocessors ?

(d) How instruction cycle, machine cycle, and clock cycle are related ? Explain them with proper sketches.

(e) How 8086 is superior to 8085 ? Explain the functions of instructions BSWAP.

(f) The 8085 microprocessor is executing a program given below :

```
        MVI A, 10 H
        MVI B, 10 H
LOOP :  ADD B
        RLC
        JNC LOOP
        HLT
```

How many times ADD B operation takes place ?

2. Attempt *any four* parts of the following : **(5x4=20)**

(a) A 3 to 8 line decoder provides chip select signals to an EPROM, a RAM and an I/O device as shown in Fig.2 (a). Specify the range of the address for EPROM, RAM and I/O device.

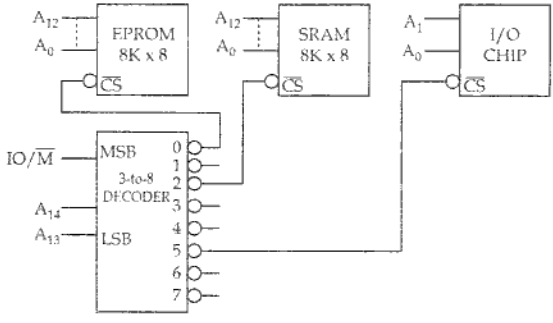

Fig.2(a)

(b) What is the difference between logical address and physical address ? What is the difference between MOV AX, [1234H] and MOV AX, 1234H ? Explain it.

(c) Explain with suitable examples for 8086 microprocessor :

(i) direct addressing,

(ii) register addressing,

(iii) register indirect addressing,

(iv) immediate addressing.

(d) Explain the difference among SHORT JUMP, NEAR JUMP and FAR JUMP.

(e) Explain END, ENDS, ENP. Write an assembly language program to find out 2's complement of two bytes of data.

(f) How many blocks divide the architecture of the 80286 ? Explain them in brief.

3. Attempt *any two* parts of the following : **(10x2=20)**

(a) Form a control word to set the D_3 bit of Port-C of the 8255. Write a program that drives 8 numbers of LEDs sequentially using any one of the ports of PPI. How chip selection and port selections are implemented in 8255 ?

(b) How many 8259 can be interconnected in cascaded mode ? Show their cascading structure.

(c) What is the meaning of C/$\overline{D}$, RXD, $\overline{RXC}$, $\overline{DSR}$, and $\overline{TXD}$ in 8251 ? Explain mode word and common word of 8251.

OR

What is the difference between 2-key lock out and n-key roll over of the 8279 ?

4. Attempt *any two* parts of the following : (10x2=20)

(a) What is the basic difference between 8253 and 8254 timer counters ? How 10 KHz square wave can be generated with 1 MHz frequency connected to counter-0 ?

(b) What are special features of 0808/0809 ADC ? Explain its internal architecture. What would be the largest output of an 8-bit DAC that produces 1 V for the digital input 0011 0010 ?

(c) Explain clearly the terms aperture time and acquisition time used in sample and hold system.

5. Attempt *any two* parts of the following : (10x2=20)

(a) How many memory banks the 80386 has ? What is the size of it ? Why protection feature is present in the 80386 ?

(b) Write technical note to differentiate between Pentium and Power PC.

(c) What happens to the internal blocks of the 8051 after RESET is applied ? What is the use of B-register of the 8051 ? What is the function of watchdog timer in 8051 microcontroller ?

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