

328555(28)

**BE (5th Semester)
Examination, April - May, 2017**

[New Scheme]

Advance Microprocessor and Interface

Time Allowed : 3 hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : (i) Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d) of each question.

(ii) The figures in the right-hand margin indicate marks.

1. (a) Why the length of pre-fetch instruction queue is of 6 bytes in 8086? [2]
- (b) Briefly explain the maximum mode configuration of 8086 and neatly sketch the read and write timing sequence. [7]

- (c) Given that [BX] = 6200, [SI]=2000 and Displacement= 5000, determine the effective addresses for the following addressing modes : [7]

- (i) register
- (ii) direct
- (iii) register indirect using BX
- (iv) register relative using [BX]
- (v) based indexed
- (vi) based indexed relative

- (d) State the function of the following signals of 8086 : [7]

- | | |
|--------------|------------|
| (i) RQ/GT | (ii) LOCK |
| (iii) DT/R | (iv) MN/MX |
| (v) QS0, QS1 | (vi) TEST |
| (vii) BHE | |

2. (a) Brief the instruction used to handle look up tables in 8086. [2]

- (b) With suitable example, explain the following instructions by stating the addressing mode they belong to : [7]

- | | |
|------------|------------|
| (i) LDS | (ii) XLAT |
| (iii) TEST | (iv) SCASB |
| (v) CPMPSW | (vi) AAA |
| (vii) AAM | |

- (c) Write an assembly language program to add two ASCII values residing at the Byte location 2000 : 0200 and 2000 : 0300 and store the result in ASCII at the location 2000 : 0400. [7]
 - (d) Write an assembly language program to store null value 00H to the 100 bytes memory location starting from 2000 : 0200 onwards. [7]
3. (a) What is the role of BHE and A0 signal in memory interfacing? [2]
- (b) Interface following memory chip with 8086 microprocessor, assume suitable address for EPROM : [7]
- (i) 8K*8 EPROM 2 nos.
 - (ii) 8K*8 RAM 2 nos.
- (c) Interface a PIT 8254 with 8086 micro processor and write an assembly language program to generate an square wave signal of the frequency 2 kHz. [7]
- (d) Sketch and explain the interface of DMA controller 8257 to the 8086 microprocessor in minimum mode. [7]
4. (a) Write the command word register of PPI 8255. [2]
- (b) Sketch and explain the interface of PPI 8255 to the 8086 microprocessor in minimum mode. [7]

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- (c) Interface a DAC 0800 to 8086 and write a program to generate a triangular waveform. [7]
 - (d) Interface DAC AD 7523 with an 8086 CPU running at 8 MHz and write an assembly language program to generate a sawtooth waveform of period 1 ms with V_{max} 5V. [7]
5. (a) How virtual memory of 64 TB can be interfaced with 80386 based systems? [2]
- (b) What do you mean by page translation mechanism and how it enable programmer to access the 4GB memory, pagewise? Give detail on the size of page frame and no. of pages accessed in this approach. [7]
- (c) What are the different registers used in protected mode of operation? Elaborate on the control register of 80386. [7]
- (d) Write the difference between real and protected mode of operation and detail the way of memory accessing in both of it. [7]

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