

Sem - V Microprocessor Biom

2nd Exm. U9-AM(a)

on. 5231-09.

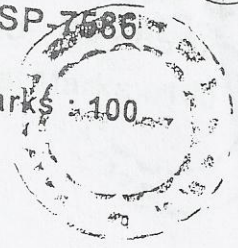
(OLD COURSE)

(3 Hours)

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SP-7686

[ Total Marks : 100 ]



- N.B.:
- (1) Question No. 1 is compulsory.
  - (2) Attempt any four questions out of remaining six questions.
  - (3) Assume suitable data wherever required but justify them.
  - (4) Give proper comments to Assembly language program.

Design a 8086 based Microprocessor System under following specifications :— 20

- (i) Working frequency 5 MHz
- (ii) Working with 8087
- (iii) 2 Input ports with Handshake signals
- (iv) 2 Output ports with Interrupt signals
- (v) 2, 16 bits Input ports
- (vi) 2, 16 bits Output ports
- (vii) 64 kB ROM using 16 kB chip
- (viii) 128 kB RAM using 32 kB chip

Draw Memory Map and Input Output Map.

- (a) Discuss Architecture of 8087 Co-processor. 10
- (b) Convert the following numbers into the Word int, Short int and Long int format supported by 8087. 10
  - (i)  $(8630)_{10}$
  - (ii)  $(-F630)_{10}$

- (a) Discuss the following instructions supported by 8086 :— 12
  - (i) LOCK
  - (ii) SCASB
  - (iii) IDIV
  - (iv) WAIT

- (b) What are Assembler directives used for data definitions ? Write a Program in Assembly language to add two 8 bit numbers. Numbers are stored in memory labeled as OP 1 and OP 2 (declared as byte). Store the answer in the ANSWER location. 8
- (a) What is mean by Software and Hardware Interrupt ? How simultaneous Interrupts are handled or serviced ? 10

[ TURN OVER ]

- (b) Discuss the role of following pins of 8259 Programmable Interrupt controller :—
- (i)  $\overline{SP/EN}$
  - (ii)  $CAS_0 - CAS_2$
  - (iii)  $\overline{INT}$
  - (iv)  $\overline{INTA}$

Write initialization instructions for 8259 Interrupt Controller to meet the following specifications :—

- (i) Interrupt type 64H
- (ii) Single 8259
- (iii) Edge Triggered
- (iv) Unmask  $IR_0$  and  $IR_2$

Assume the address for 8259 are 4000H and 4002H.

5. (a) Explain working of 8289 Bus Arbiter with 8086. 10
- (b) Discuss the Operating modes of 8254 Programmable Timer. 10
6. (a) Differentiate between following any three :— 12
- (i) Loosely coupled and closely coupled configuration
  - (ii) Minimum and Maximum mode configuration of 8086
  - (iii) Procedure and Macro
  - (iv) Absolute and Linear address Decoding

(b) Calculate the Input Control word of 8255 with the following specifications :— 8

- (i) Port A :— Input port
- Port B :— Output port
- Port C Upper :— Output port
- Port C Lower :— Input port
- All ports in Mode 0
- (ii) Port A :— Input port
- Port B :— Output port
- Port C Upper :— Output port
- Port C Lower :— Input port
- Mode 0 for Group A and Mode 1 for Group B.

7. Write short notes on following any three :—

- (i) Minimum mode operation of 8086 2
- (ii) Direct Memory Access
- (iii) 8288 Bus Controller
- (iv) Memory Banks in 8086
- (v) Data types supported by 8087. R