Sem-V Microprocessors Biom

2ndExm.09-AM(a)

on. 5231-09.

(OLD COURSE)

May 09

SP-7586

(3 Hours)

[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

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(b) Discuss the role of following pins of 8259 Programmable Interrupt controller :—

(i) $\overline{SP}/\overline{EN}$
(ii) CAS_0 — CAS_2
(iii) 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.

(b) Discuss the Operating modes of 8254 Programmable Timer. 10

6. (a) Differentiate between following any **three** :— 10

(i) Loosely coupled and closely coupled configuration 12
(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.