Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech/(ICE/OLD)/SEM-6/EI-602/2013

2013

MICROPROCESSOR BASED SYSTEM

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct answers for the following : $10 \times 1 = 10$

i) Which one of the following segments is used by the 'CMPSB' string instruction for the destination ?

a) CS b) DS

c) ES d) SS.

ii) No. of SFR (Special Function Register) in 8051 micro controller is

a) 20 b) 25

c) 21 d) 27.

iii) What is the vector location for INT4 ?

a) FF48H b) 0012H

c) 000CH d) 000BH.

iv) Which registers are used as the base location for all executable instruction and stack ?

a) CS and SS respectively

b) DS and SP respectively

c) ES and SS respectively

d) None of these.

v) Provision for software interrupts in 8086 is

a) 32 b) 256

c) 64 d) 128.

vi) Address/data bus connected to even memory bank is

a) AD0-AD7

b) AD8-AD15

c) A16-A19

d) any of these.

vii) In 8284A chip, crystal oscillator frequency is 24MHz. The output obtained from PCLK is

a) 24 MHz b) 4MHz

c) 8MHz d) 6MHz.

viii) "How many bits obtain as an output from ICL 1709 chip ?

a) 8 b) 16

c) 12 d) 10.

ix) The SSO of 8088 microprocessor indicates

a) status

b) multiplexed status\address line

c) multiplexed data\address line

d) none of these.

x) In mode 3, the 8253 can be used as

a) software triggered strobe

b) rate generator

c) programmable monoshot

d) square wave generator.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Explain ODD and EVEN memory bank organization of 8086.

3. Explain the function of SIM and RIM instruction in 8085.

4. What do you mean by addressing mode ? What are the different addressing modes supported by 8051 ? Explain each of them with suitable examples. 1 + 4

5. Describe the function of different bits of TMOD register regarding 8051 μC.

6. With the help of a block diagram explain a microprocessor-based system pointing out the role of microprocessor and other peripheral block.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Distinguish between Microprocessor 8086 and 8088.

   b) Draw and discuss pipeline architecture.

   c) What is the function of XLAT instruction in 8086 ?

d) What are the addressing mode of the following instruction ?

LDAX B, XTHL, MOV A, M. 3 + 7 + 2 + 3

8. a) How interrupt operation takes place in 8086 Microprocessor ? Draw the structure of interrupt vector table.

b) Explain the addressing mode of 8086 with suitable examples for each.

c) Write a program in 8086 to count from 0 to 9 with a 1 sec delay between each count. At the end of count 9, the counter should reset itself to 0 and repeat the sequence continuously. Use proper register pair to set up the delay, and display each count at one of the O/P port. Assume system clock frequency is 1 MHz.

2 + 3 + 4 + 6

9. a) Write the control word format of 8255 for I/O mode.

b) Write the BSR control word of 8255 to set and reset PC_7, PC_3 and PC_0.

c) Design an interfacing circuit (with assembly language program) to read data from an A/D converter using 8255 chip in mode — 0 and BSR mode.

(i) Set up Port — A to read data

(ii) Set up PC_0 to start conversion and PC_7 to read end of conversion (active low signal) of the converter.

Assume analog signals are present at input 3 of ADC.

d) What do you mean by handshaking logic ? 3 + 3 + 7 + 2

10. a) Draw the Interfacing circuit two 8K RAM and two 4K EPROM chips with 8086 so to form a completely working configuration. Give memory map also.

b) Explain wait state generation and reset operation using 8284A.

c) Write the difference between static RAM and Dynamic RAM. 7 + 6 + 2

11. a) Discuss the following signal/pin description of 8051.

(i) $\overline{\text{PSEN}}$ (ii) $\overline{\text{EA}}$ / Vpp (iii) *x*-tal1 and *x*tal 2

(iv) T0 and T1.

b) Discuss the different bits of IE and IP register of 8051.

c) Discuss the features of 8051 microcontroller.

6 + 6 + 3

12. Write the short notes on any *three* of the following : 3 × 5

a) 8251

b) DMA controller

c) RS-232

d) D/A converter interfacing

e) PID controller

f) Modem.