



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.*

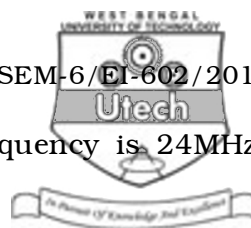
**GROUP – A**

**( 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  $\mu$ C.
6. With the help of a block diagram explain a microprocessor-based system pointing out the role of microprocessor and other peripheral block.

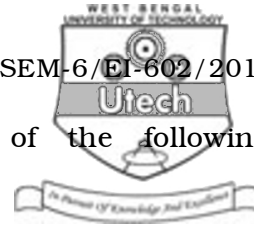
**GROUP – C**

**( 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 ?

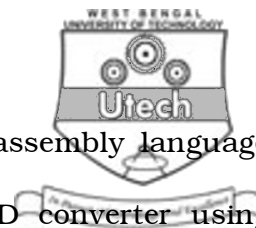
LDAX B, XTHL, MOV A, M.

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  $PC_0$ .

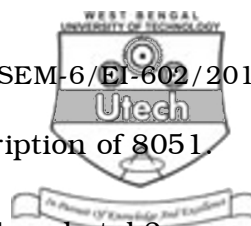


- c) Design an interfacing circuit (with assembly language program) to read data from an A/D converter using 8255 chip in mode — 0 and BSR mode.

- (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)  $\overline{\text{EA}}$  /  $V_{pp}$  (iii)  $x\text{-tal1}$  and  $x\text{-tal2}$

(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.

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