Student Exam No:_____

GANPAT UNIVERSITY

B. Tech. Semester V (CE/IT)

Regular Examination November – December 2014

2IT502/2CE502: Microprocessors and Interfacing

Time: 3 Hours] **[Total Marks: 70**

Instructions: 1. All questions are compulsory.
2. Answer both sections in separate answer sheets.

SECTION-I

Que.1 (a) Describe 8086 Interrupt vector table.. **[6]**

(b) List out names of all dedicated interrupts and explain divide by zero interrupt. **[6]**

OR

Que.1 (a) Draw flowchart to show which ICWs are needed for various situations and explain format of ICW1 for initialization of 8259A. **[6]**

(b) Explain use of hardware interrupts for counting application with example. **[6]**

Que.2 (a) Draw control word format of 8254 and Suppose you want to use counter 0 of the 8254 to produce a stable 78.6 KHz square wave signal for a UART clock by dividing down the 2.45 MHz with BCD countdown. Then construct control word for it. **[6]**

(b) Draw flag register format and specify use of each flag. **[5]**

OR

Que.2 (a) List out all 8254 counter modes and explain mode2 in detail. **[6]**

(b) Calculate hexadecimal value of CX to be used, which produces a delay of 6700 µs on an 8086 with a 40MHz clock for below given delay loop. **[5]**

```
            MOV  CX, N          ; 4 Clock cycles
KILL_TIME : NOP                 ; 3 Clock cycles
            NOP                 ; 3 Clock cycles
            NOP                 ; 3 Clock cycles
            LOOP KILL_TIME      ; 17 or 5 Clock cycles
```

Que.3 (a) Draw block diagram of 8086 internal architecture. **[4]**

(b) What is the advantage and disadvantage of using 555 timer and crystal-controlled oscillator for producing real time clock. **[4]**

(c) Do as directed.

(1) Calculate physical address for 1000:1234H. **[1]**

(2) What is difference between the instructions MOV AX, 3425H and MOV AX,[3425H]. **[1]**

(3) In mode 1 of 8254 timer if another trigger pulse comes before the previously loaded count has been counted down to 0. what will be the effect in OUT wave form. **[1]**

(4) In mode 3 of 8254 timer if count value is 3, then what will be the effect on OUT wave form. **[1]**

SECTION-II

Que.4 (a) Draw and explain block diagram of 8086 memory banks [6]

(b) Write an ALP for generating Fibonacci series up to 10 elements, the series should start with 0 & 1. [6]

OR

Que.4. (a) Write an ALP to find average of 16-bit array having n numbers of elements. [6]

(b) Write the 8086 assembly language instructions for following operations. [6]

(1) Invert all bits of CL.
(2) OR the higher 8 bits of AX with DX.
(3) Copy content of DL to memory location whose offset is in SI.
(4) Rotate the MSB position of CL into the LSB position.
(5) Divide 1020h by 56h.
(6) Rotate BX 8 time's right side.

Que.5. (a) Write an ALP to check whether given string is palindrome or not. (if it is palindrome store 0 in ans otherwise store 1). [6]

(b) Explain the use of 74S373 octal latch, transceiver, M/IO signal, DT/R signal and DEN signal in block diagram of 8086. [5]

Que.5. (a) Write an ALP to find the factorial of the given number using recursive procedure. [6]

(b) Draw and explain block diagram of Port decoder. [5]

Que.6. (a) What are the differences between Memory mapped IO and Direct IO. [3]

(b) Explain the function of the following instructions : [4]

(1) JB
(2) CMPSB
(3) JC
(4) REP

(c) Draw and explain Program Development flowchart in detail. [5]

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