VIT
Vellore Institute of Technology

Final Assessment Test - April 2018

Course: CSE2006 - Microprocessor and Interfacing
Class NBR(s): 3487 / 3488 / 3489/ 3490 / 3491 / 3492 / 3493 / 4332 / 4172
Slot: B2
Time: Three Hours
Max. Marks: 100

PART – A (8 X 5 = 40 Marks)
Answer ALL Questions

1. Justify how 8086 architecture supports following features:
   a) Faster Execution
   b) Optimal pin usage
   c) Pipelining
   d) Increased Memory addressing capability

2. Identify the output of the following code and rewrite the code without using SAR/SAL instruction which will produce the same output?

```
MOV AL, 0C0H
MOV CL, 01H
SAL AL, CL
```

   b)
```
MOV AL, 0C0H
MOV CL, 02H
SAR AL, CL
```

3. a) Determine the value of AL and the value of the status flags after executing the following instruction sequence.

```
MOV AL, 7Fh
NEG AL
```

   b) If AL=09h and BL=08H, what will be the content of AX, after the execution of instruction sequence.

```
MUL BL
AAM
```

4. Explain the need for an assembler directive in ALP. List out various assembler directives with an example.
5. List and explain in brief various instructions in 8086 for handling interrupts.
   Calculate the Vector Address for Interrupt Type Number-50.
6. Discuss the issues in using 8255 for software polling of IO devices. Explain how 8259 overcomes the issues.
7. Briefly explain about digital data transmission using modem with necessary diagram.
8. List out the data types of 8087 with an example.

PART – B (6 X 10 = 60 Marks)
Answer any SIX Questions

9. Discuss how 8086 operates in maximum mode with necessary functional diagram and timing diagram.
10. Write a program to find the number of positive and negative numbers from a given series of signed numbers using 8086 instruction set.
11. Suggest the optimal programming construct to be used for the following functionalities:
    a) To read 100 char from an input device
    b) To calculate the factorial of a given number

    Justify the programming construct with respect to Execution Time, Memory Usage and Passing Parameters.

12. a) List various 8087 instructions for data transfer.
    b) Write an 8086/8087 procedure to calculate the area of circle. Assume that the integer radius is passed in register AH and return the area (rounded to the nearest integer) in BX:AX

13. a) Specify the asynchronous mode instruction format and command instruction format for 8251A.
    b) Write the initialization routine required to program the 8251A USART for asynchronous transmission with 7 data bits, 2 stop bits, and odd parity. Select a 16 X clock and Program DTR and RTS to be low.

14. Design a programmable timer using 8253 and 8086. Interface 8253 at an address 0040H for counter 0 and write the following ALPs. The 8086 and 8253 run at 6 MHz and 1.5 MHz respectively.
    a) To generate a square wave of period 1ms.
    b) To interrupt the processor after 10 ms.
    c) To derive a monoshot pulse with quasistable state duration 5 ms.

15. With a neat sketch explain the internal block diagram and operating modes of 8255 programmable parallel port device.

16. Briefly explain about your CAL 'J' component project work in the following illustrations.
    a) Objectives H/w and s/w components identification
    b) Block diagram/schematic diagram and
    c) Pseudocode and challenges faced during your project work.