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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Fourth Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; June/July - 2015

Microprocessor and Microcontroller

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer **FIVE** full questions, selecting **ONE** full question from each **Unit**.*

UNIT - I

1. a. Explain the internal configuration of 8086 microprocessor with a neat block diagram. 10

   b. With (BX) = 2520, (DI) = 1130, Displacement = 1230, (DS) = 1000, determine the effective address and physical address (Wherever applicable) for the following addressing modes:
   (i) Direct (ii) Register indirect using BX
   (iii) Register relative using BX (iv) Based indexed
   (v) Based indexed relative 10

2. a. Describe the pin functions and features of maximum mode configuration of 8086. 10

   b. Write an 8086 ALP to average two temperatures and store the result in memory. 10

UNIT – II

3. a. Describe the following instructions with examples.
   (i) DAS (ii) TEST (iii) AAA
   (iv) SAR (v) RCR 10

   b. With diagrams describe three different types of memory system of 80386. 10

4. a. Write an ALP to multiply two ASCII Bytes and store the result in ASCII form for 8086 microprocessor. 10

   b. With a relevant diagram briefly explain the internal structure of the Pentium pro microprocessor. 10

UNIT – III

5. a. Write the diagram of PSW register and explain each flag with example for 8051 microcontroller. 10

   b. Write a 8051 ALP which checks whether the ten numbers stored from external RAM address 3000h are Positive or Negative. The program should store accordingly 00H / FFH from internal RAM location 20H onwards. 10

6. a. Briefly describe the features of 8051 microcontroller with Block diagram. 10

   b. Explain the five addressing modes of 8051 with example. 10

UNIT - IV

7. a. What is the difference between timer and counter operation of 8051? How to start / stop the timer/ counter of 8051 when (i) Gate = 0 and (ii) Gate = 1. Explain with relevant diagram. 10

Contd…2

b. What is the difference between polling and interrupt? Explain the interrupts in 8051. Indicate their vector addresses and arrange them according to their default priorities. With an example explain how to modify their priorities? 10

8. a. Explain all FOUR modes of timer with relevant diagrams. 10

b. Code the text "PESCE" on to chip ROM. Write a program to copy it from code space onto the upper RAM memory space starting at the address 80h. Also as you place a byte in RAM, give a copy to P0. 10

UNIT - V

9. a. Write a program that displays a value of 'Y' at port 0 and N at port 2 and also generates a square wave of 10 kHz with timer 0 in mode 2 at port pin 12, X_{TAL} = 22 MHz. Show the delay calculations. 10

b. Write a program in which 8051 reads data from P1 and write it to P2 continuously while giving a copy of it to the serial port to be transmitted serially. Assume that X_{TAL} = 11.0592 MHz. Set the band rate at 9600. 10

10 a. Write an ALP to display "MYSORE" on LCD display. Show the interfacing circuit with functional pins of LCD. 10

b. Explain with a Block diagram, step by step procedure involved to interface 4 X 4 matrix keypad with 8051. 10

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