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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 - 2016

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 architecture of 8086 processor. 10

b. Explain with example for following addressing modes of 8086 processor :

(i) Direct addressing (ii) Immediate addressing (iii) Register indirect addressing 10

(iv) String addressing (v) Based indexed addressing.

2 a. Explain the function of following pins of 8086 processor :

(i) $\overline{S}_2, \overline{S}_1, \overline{S}_0$ (ii) QS1, QS0 (iii) ALE 10

(iv) $\overline{LOCK}$ (v) $\overline{DEN}$

b. Write an 8086 ALP to check whether a given character is present in an array. If present display 'YES' on console else display 'NO' on console Read array and the character from keyboard using DOS interrupts. 10

UNIT - II

3 a. Explain the function of following instructions of 8086 processor with an example for each,

i) LES register, source (ii) POP NEXT[BX] 5

(iii) XLAT (iv) SCAS (v) CALL CX

b. Write an 8086 ALP to check whether the given byte of data is even or odd. If even display 'EVEN' on console else display 'ODD' on console. 8

c. Write an 8086 to find the square of 8 bit number using look up table. 7

4 a. Explain with the help of block diagram, the functional units of 80386 processor. 10

b. Explain the features available in 80486 processor. 10

UNIT - III

5 a. Explain internal memory organization of 8051 micro controller. 6

b. Explain PSW register configuration of 8051. 4

c. Explain the interrupt structure of 8051. 10

6 a. Explain various addressing modes of 8051. 10

b. Explain the following instructions of 8051,

(i) DA A (ii) CJNE A, Rr, addr 10

(iii) JB b, raddr (iv) LJMP addr (v) MUL AB

Contd….2

UNIT - IV

7 a. Explain the structure and function of following registers of 8051,
(i) TMOD (ii) TCOM. 10

b. Write an 8051 ALP to generate the square wave on P1.17 with ON period of 1 msec and OFF period of 2 msec using XTAL = 11.0592 MHz. 10

8 a. Explain the various modes of operations of timers of 8051. 10

b. Write an 8051 ALP to check whether the given byte is 2 out of 5 codes or not. If yes send 00 on port 0, else send FF on port 0. 10

UNIT - V

9 a. Consider that a switch is connected to P2.3. Monitor the switch and if status of switch is closed send HELLO serially and if the status is open send 'WORLD' serially assuming XTAL = 11.0592 MHz, band rate of 9600, 8bit data and 1 stop bit. 10

b. Write an 8051 ALP to light LEDS at port 0 if switch connected to INT0 is pressed and to light LEDS connected at port 2 if switch connected at INT1is pressed. 10

10 a. Interface an LCD module to 8051 and write an ALP to display 'WELCOME'. 10

b. Interface DAC to 8051 and write an ALP to generate,
(i) Triangular wave, 10
(ii) Square wave with 50% duty cycle.

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