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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 : 10
- (i) Direct addressing (ii) Immediate addressing (iii) Register indirect addressing
- (iv) String addressing (v) Based indexed addressing.
- 2 a. Explain the function of following pins of 8086 processor : 10
- (i) $\overline{S_2}, \overline{S_1}, \overline{S_0}$ (ii) QS1, QS0 (iii) ALE
- (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, 5
- i) LES register, source (ii) POP NEXT[BX]
- (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, 10
- (i) DA A (ii) CJNE A, Rr, addr
- (iii) JB b, raddr (iv) LJMP addr (v) MUL AB

UNIT - IV

- 7 a. Explain the structure and function of following registers of 8051, 10
(i) TMOD (ii) TCOM.
- 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 INT1 is 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, 10
(i) Triangular wave,
(ii) Square wave with 50% duty cycle.

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