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P.E.S. College of Engineering, Mandya - 571 401*(An Autonomous Institution affiliated to VTU, Belagavi)***Fourth Semester, B.E. - Electronics and Communication Engineering****Semester End Examination; June - 2017****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. Briefly describe the architecture of 8086 microprocessor with relevant block diagram. 10
- b. With (BX) = 6300, (DI) = 1020, Displacement = 1234, (DS) = 3000, determine the effective address and physical address (if applicable) resulting from any five addressing modes of 8086, if not applicable write N/A against them. 10
- 2 a. What is the meaning of minimum and maximum modes used in 8086 microprocessor? 4
- b. Write a diagram indicating the minimum mode configuration in 8086. 8
- c. Write an ALP to add 12 data bytes and find average. 8

UNIT - II

- 3 a. Describe the following instructions with examples : 10
- (i) BTC (ii) SCAS (iii) IDIV (iv) NEG (v) AAM.
- b. Compare 8086 and 80386 processors with reference to different important features. 10
- 4 a. Write an 8086 assembly program to transfer a block of 4 words from offset address 200h to destination address which starts from 204h onwards. 10
- b. What are the improvements in Pentium processors over 80486? 10

UNIT - III

- 5 a. Write a block diagram of 8051 microcontroller and describe its features briefly. 10
- b. What are the main differences between : 10
- (i) CISC and RISC (ii) Von-Neumann and Harvard architectures?
- Which are these does 8051 use in (i) and (ii) above?
- 6 a. Briefly describe different addressing modes used in 8051 with examples. 12
- b. Write an 8051 ALP to find the largest number in a given array of size 5 starting from 5100h, external memory location. The largest number has to be stored in 8100h address. 8

UNIT - IV

- 7 a. What are the interrupt types? Provide their RAM locations. Indicate the different priority assigned to various interrupts after reset. 10
- b. Write an 8051 ALP that continuously get 8 bit data from P₀ and send to P₁ while simultaneously creating a square wave of 200 micro second period on P2.1. Use timer 0 to create a square wave. 10

- 8 a. What is the difference between Timer and Counter operation in 8051? 5
- b. Explain all four modes of timer with relevant diagrams. 10
- c. Explain the difference between jump and call instruction. 5

UNIT - V

- 9 a. Write an 8051 ALP to display PESCE on LCD display and show the interfacing circuit with functional pins of LCD 10
- b. Write a program in 8051 ALP to send the letter 'P' serially using the UART at baud rate of 9600. Configure the SCON register in mode 1. Assume the crystal frequency of 11.0592 MHz. Show all calculations for mode and baud rate generation. 10
- 10 a. Explain step by step procedure to interface 4x4 matrix keypad with 8051 along with a relevant block diagram. 10
- b. Write a diagram indicating 8051 connection to ADC 0809. 5
- c. Write steps to program the ADC 0808/0809. 5

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