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Question Paper Code: 55043

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fifth Semester

Electronics and Communication Engineering

15UEC503 - MICROPROCESSORS, MICROCONTROLLERS AND APPLICATIONS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. What is the Maximum clock frequency in 8086?
(a) 5 MHz (b) 5 Hz (c) 20 MHz (d) 15 MHz
2. In 8279, a scanned sensor matrix mode, if a sensor changes its state, the _____ line goes _____ to interrupt the CPU.
(a) CS, high (b) A0, high (c) IRQ, high (d) STB, high
3. The 8051 can handle _____ interrupt sources.
(a) 3 (b) 4 (c) 5 (d) 6
4. In reading the columns of a matrix, if no key is pressed we should get all in binary notation.
(a) 0 (b) 1 (c) F (d) 7
5. Which of the following is not a single bit instruction in AVR?
(a) SBI (b) PORT (c) CBI (d) All the above

PART - B (5 x 3 = 15 Marks)

6. Differentiate Procedure and Macro directives in 8086.
7. Categorize the basic modes of operation of 8255.

8. If a 12 MHz crystal is connected with 8051, how much is the time taken for the count in timer 0 to get incremented by one?
9. What are the applications of microcontroller?
10. What are the classifications of AVR microcontrollers?

PART - C (5 x 16 = 80 Marks)

11. (a) (i) Describe the internal architecture of 8086 Microprocessor with neat diagrams. (10)

(ii) Analyzing an 8086 ALP for Multiplication of two 8-bit numbers. (6)

Or

- (b) (i) Illustrate the classification of 8086 instructions based on its word length and Explain the data transfer, arithmetic and branch instructions with examples. (10)

(ii) Demonstrate about the assembler directives with an example for SEGMENT, TYPE and OFFSET in 8086. (6)

12. (a) (i) How to interface a DMA controller with a microprocessor? Assess how DMA controller transfers large amount of data from one memory locations to another memory location. (8)

(ii) Discuss how an 8259 is interfaced to an 8086 based system. How does 8259 service an interrupt. (8)

Or

- (b) (i) How do you interface a keyboard and the display using keyboard/display controller? (8)

(ii) Draw and explain the block diagram of 8254 Programmable Interval Timer and also explain the various modes of operation. (8)

13. (a) (i) Explain the different addressing modes in 8051 microcontroller and discuss each mode with an example. (8)

(ii) Mention the I/O pins, ports and circuits of 8051 microcontroller. (8)

Or

- (b) Explain in detail about the architecture of 8051 microcontroller with neat diagram. (16)

14. (a) Draw the diagram to interface a stepper motor with 8051 microcontroller and explain. Write its ALP to run the stepper motor in both forward and reverse direction with delay. (16)

Or

- (b) (i) With a neat circuit diagram, explain how 4x4 Keypad is interfaced with 8051 microcontroller. (8)

- (ii) Analyzing how to interface a 16 X 2 LCD display using 8051 microcontroller. (8)

15. (a) Elaborate in detail about the architecture of AVR microcontroller with its registers. (16)

Or

- (b) (i) Explain the various addressing modes of AVR in detail. (8)

- (ii) Describe in detail about the instruction set of AVR controller. (8)
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