

Hall Ticket Number :

**R-15**

**Code: 5G262**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2023

**Microprocessors and Microcontrollers**

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks )

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**UNIT-I**

Marks CO BL

1. a) Explain the following instruction set of 8086 microprocessor with examples: (i) Bit Manipulation Instructions (ii) Program Execution Transfer Instructions (iii) Interrupt Instructions (iv) Arithmetic Instructions. 7M CO1 L2
- b) Write an assembly language program in 8086 to sort the given 'N' numbers in ascending order. 7M CO1 L3

**OR**

2. a) Explain various Addressing modes of 8086 microprocessor. 7M CO1 L2
- b) Write an 8086 ALP to find the sum of numbers in the array of 10 elements. 7M CO1 L3

**UNIT-II**

3. a) Draw the ADC interface to 8086 using 8255 PPI. With a neat program, explain how analog to digital conversion is carried out by 8086 microprocessor. 7M CO2 L2
- b) Explain the pin diagram of ADC 0808/0809 7M CO2 L2

**OR**

4. a) Explain the vectored interrupt table of 8086 processor? 7M CO2 L2
- b) Discuss 8255 mode-0 operations and determine the control word with an example. 7M CO2 L2

**UNIT-III**

5. a) Explain about necessity of communication interfaces and 8251 interfacing 7M CO3 L2
- b) Draw an internal architecture of USART 8251 and explain its different status and modes and control formats neatly. 7M CO3 L2

**OR**

6. a) What are the important features of 8251 7M CO3 L1
- b) Discuss the overrun error and framing error with reference to 8251 7M CO3 L2

**UNIT-IV**

7. a) Explain about Timers and serial communication features of 8051 7M CO4 L2
- b) Discuss about the organization of Internal RAM and Special function registers of 8051 Microcontroller in detail. 7M CO4 L2

**OR**

8. Explain instruction set of 8051 microcontroller with appropriate examples. 14M CO4 L2

**UNIT-V**

9. a) Discuss about the I/O ports, Timers and ADC of Arduino 7M CO5 L2
- b) Mention the differences between 16-bit microcontroller and 8-bit microcontroller. 7M CO5 L5

**OR**

10. a) Explain the features and applications of ARM9 microcontroller. 7M CO5 L2
- b) Draw the block diagram of ARDUINO microcontroller and explain its main features 7M CO5 L2

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Important Note: 1. On completing your answers. Compulsorily draw diagonal cross line on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 32+8=40, will be treated as malpractice.