**20EI503**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **February,2023** | **Electronic & Instrumentation Engineering** | | |
| **Fifth Semester** | **Microcontroller** | | |
| **Time:** Three Hours | | **Maximum: 7**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (14X1 = 14 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X14=56 Marks) |

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| 1. | a) | Differentiate Microprocessor and Microcontroller | CO1 | L2 | 1M |
|  | b) | What is the function of EA pin | CO1 | L1 | 1M |
|  | c) | List the 16 bit registers of 8051 | CO1 | L1 | 1M |
|  | d) | What is control transfer range of JBC instruction. | CO2 | L2 | 1M |
|  | e) | How many clock cycles is known as one machine cycle? | CO2 | L3 | 1M |
|  | f) | Illustrate DB assembler directive | CO2 | L2 | 1M |
|  | g) | List different operating modes of 8255 | CO3 | L2 | 1M |
|  | h) | Explain the operation of control pins in LCD | CO3 | L2 | 1M |
|  | i) | Define debouncing | CO3 | L1 | 1M |
|  | j) | Draw neat interfacing circuit diagram of stepper motor with 8051. | CO3 | L2 | 1M |
|  | k) | Draw the status register of 16F8XXs | CO4 | L3 | 1M |
|  | l) | How does CCP module works in PIC microcontrollers | CO4 | L2 | 1M |
|  | m) | What are different communication protocols are there in 16F8XX | CO4 | L2 | 1M |
|  | n) | How many timers are there in 16F8XX and what are they? | CO4 | L3 | 1M |
| **Unit -I** | | | | | |
| 2. | a) | Illustrate the addressing modes of 8051. | CO1 | L1 | 7M |
|  | b) | Describe the memory organization in 8051. | CO1 | L3 | 7M |
|  |  | **(OR)** |  |  |  |
| 3. | a) | With neat architecture diagram explain the operation of 8051. | CO1 | L2 | 7M |
|  | b) | Draw neat PSW register bit diagram and explain each bit operation. | CO1 | L1 | 7M |
|  |  | **Unit –II** |  |  |  |
| 4. | a) | List the logical instructions of 8051 and explain each with sufficient examples. | CO2 | L3 | 7M |
|  | b) | Write an assembly language program to arrange the given numbers in ascending and descending orders. | CO2 | L4 | 7M |
|  |  | **(OR)** |  |  |  |
| 5. | a) | Explain the operation of different modes of timers in 8051. | CO2 | L1 | 7M |
|  | b) | Write an assembly language program to find largest and smallest of an array of numbers. | CO2 | L3 | 7M |
|  |  | **Unit -III** | |  |  |
| 6. | a) | Write an assembly language program to display “Bapatla Engineering College” on LCD. | CO3 | L4 | 7M |
|  | b) | Draw neat interfacing circuit diagram of temperature sensor with 8051 and write an assembly language program to measure room temperature for every 30 sec. | CO3 | L2 | 7M |
|  |  | **(OR)** |  |  |  |
| 7. | a) | Demonstrate interfacing of seven segment display with 8051. | CO3 | L1 | 7M |
|  | b) | Write an assembly language program to generate 5kHz square wave by interfacing DAC with 8051. | CO3 | L2 | 7M |
|  |  | **Unit -IV** |  |  |  |
| 8. | a) | Draw pin configuration of 16F8XX microcontroller and explain each pin operation. | CO4 | L1 | 7M |
|  | b) | Explain the various registers in 16F8xx microcontroller. | CO4 | L3 | 7M |
|  |  | **(OR)** |  |  |  |
| 9. | a) | Describe the memory organization in 16F8XX microcontroller. | CO4 | L2 | 7M |
|  | b) | Write a short notes on MSSP module in PIC microcontroller. | CO4 | L3 | 7M |

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