**14EC804 (B)**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Supplementary) DEGREE EXAMINATION** | | | |
| **July,2021** | **Electronics and Communication Engineering** | | |
| **Eighth Semester** | **Advanced Microcontrollers** | | |
| **Time:** Three Hours | | **Maximum :** 60 Marks | |
| *Answer ALL Questions from PART-A.* | | | (1X12 = 12 Marks) |
| *Answer* ***ANY FOUR*** *questions from PART-B.* | | | (4X12=48 Marks) |
| **Part - A** | | | |

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| 1 | Answer all questions | | (1X12=12 Marks) | |
|  | a) | Compare Harvard architecture and Princeton architecture. | |  |
|  | b) | Name a16-bit register in 8051? | |  |
|  | c) | How does an instruction differ from a directive. | |  |
|  | d) | Which pin is assigned to GND? | |  |
|  | e) | Which ports of 8051 are bit-addressable? | |  |
|  | f) | Write one instruction for immediate addressing mode in 8051. | |  |
|  | g) | Is TCON register bit-addressable? | |  |
|  | h) | Explain DA instruction? | |  |
|  | i) | Give the instruction for division of unsigned numbers. | |  |
|  | j) | What is meant by ISR? | |  |
|  | k) | How many bytes of address space in the interrupt vector table are assigned to INT0 interrupt? | |  |
|  | l) | Can the 8051 generate two square waves simultaneously? | |  |
| **Part - B** | | | | |
| 2 | a) | Explain the RAM memory space allocation in the 8051 | | 6M |
|  | b) | Write an assembly language program to complement the ACC 700 times. | | 6M |
|  | | | | |
| 3 | a) | What is an assembler directive? List and explain different assembler directives of the 8051 microcontroller | | 6 M |
|  | b) | Write an 8051 assembly language program to multiply 25 by 10 using the technique of repeated addition. | | 6 M |
|  | | | | |
| 4 | a) | Explain how Port 1 acts as an input port. | | 6 M |
|  | b) | Explain indexed addressing mode and MOVX instruction. | | 6 M |
|  | | | | |
| 5 | a) | Write an assembly language program to copy FFH into RAM address 50H to 60H. | | 6 M |
|  | b) | Write an 8051 assembly language program to add 16- bit numbers. | | 6M |
|  | | | | |
| 6 | a) | Explain register bit-addressability. | | 6 M |
|  | b) | How are timers 0 and 1 started and stopped by instructions? | | 6 M |
|  | | | | |
| 7 | a) | Explain in detail about SCON register. | | 6 M |
|  | b) | Write an ALP in 8051 microcontroller to receive the data which has been sent in serial form and send it out to port 0 in parallel form. | | 6M |
|  | | | | |
| 8 |  | Explain interfacing the keyboard to the 8051 with the help of flow chart. | | 12M |
|  | | | | |
| 9 | a) | Explain the in detail about external interrupts INT0 and INT1. | | 8M |
|  | b) | Write an ALP to toggle pin P1.2 every second. | | 4M |

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**Scheme**

1. All bits carry one mark.

2. a) Diagram- 3 M

RAM memory space allocation Explanation -3 M

b) Program with explanation -6M

3. a) Assembler Directive Definition-1 M

Explanation-5 M

b) Program with explanation -6M

4. a) Port 1 acts as an input port Explanation-6 M

b) Indexed addressing mode and MOVX instruction Explanation -6M

5. a) Program with explanation -6M

b) Program with explanation -6M

6. a) Register bit-addressability Explanation -6M

b) Timers 0 and 1 Explanation -3+3=6 M

7. a) SCON register Explanation -6M

b) Program with explanation -6M

8. a) Flowchart-4 M

Explanation-8M

9. a) INT0 , INT1 Explanation-4+4=8M

b) Program with explanation -4 M