

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2150306****Date: 21/11/2019****Subject Name: Microcontroller & Interfacing (Biomedical)****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Draw the Pin Diagram of 8051. **03**
(b) Compare Microprocessor and Microcontroller. **04**
(c) Draw the Programming model of 8051 and explain in detail. **07**
- Q.2** (a) Write a program to copy the value 65H into RAM memory locations 20H to 21H using register indirect addressing mode. **03**
(b) Explain Immediate and Register addressing mode with examples. **04**
(c) Explain IP and IE register in detail. **07**
- OR**
- (c) Enlist various data types of 'C' Programming in 8051. Write an 8051 C program to convert packed BCD 0x78 to ASCII and display the bytes on P1 and P2. **07**
- Q.3** (a) Explain PSW Register in detail. **03**
(b) Write a program to check data stored in RAM location 20h to 24h for Sign. If number is negative store them in RAM location starting from 30h. **04**
(c) Write program to arrange data in ascending order. Assume that data is stored in internal RAM location 40h to 44h. **07**
- OR**
- Q.3** (a) Explain various CJNE instructions. **03**
(b) Write a program to check string stored in memory location 50h to 55h is in palindrome or not. If yes, store 'Y' in memory location 56h else store 'N'. **04**
(c) Explain any three assembly language directives. Write a subroutine to convert Packed BCD data to Hex data. **07**
- Q.4** (a) Explain TMOD Register in detail. **03**
(b) Write a program to generate delay of 1ms. Assume crystal frequency 12 MHz. **04**
(c) Write a program in 'C' to receive data serially with 9600 baud rate and send it port P1. Assume 8 bit data and 1 stop bit. **07**
- OR**
- Q.4** (a) Explain RS-232 DB9 in detail. **03**
(b) Write a 'C' program to generate square wave with frequency of 1 Hz on pin P2.0. **04**
(c) Write a program to transmit 'Y' serially with 9600 baud rate. Assume 8 bit data and 1 stop bit. **07**

- Q.5** (a) Draw the interfacing circuit to interface DAC 0808. **03**
(b) Write a program to read status of switch connected with Port 0 and turn ON
respective LEDs connected on Port 2. **04**
(c) Explain how to interface Program ROM and Data ROM with neat circuit. **07**

OR

- Q.5** (a) Draw the interfacing circuit to interface 16x2 LCD. **03**
(b) Explain each pin of RTC DS12887 . **04**
(c) Interface ADC 0804 and LEDs with Port P1 and P2 of 8051 respectively. **07**
Write a program to read data of ADC and display it on LEDs.

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