

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER- V(OLD) EXAMINATION – SUMMER 2019****Subject Code:151001****Date:17/06/2019****Subject Name:Microcontroller And Interfacing****Time:02:30 PM TO 05:00 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) List the addressing modes of 8051 and explain register indirect and indexed addressing mode in detail with assembly language example. **07**  
(b) Explain the 8051 architecture with block diagram. **07**
- Q.2** (a) Draw and Describe function of each pins of DIP-51 Intel 8-bit microcontroller. **07**  
(b) Explain with interfacing diagram, 7 segment interfacing with 8051 and write a program to display data accordingly. **07**
- OR**
- (b) Interface 16Kbytes EPROM and 8Kbytes RAM to 8051. List instructions related to external data move with at least one example. **07**
- Q.3** (a) Describe TMOD and TCON Special Function registers. **07**  
(b) Write a program for 8051 to transfer "YES" serially at 9600 baudrate, 8 bit data, 1 stop bit. Do this continuously. **07**
- OR**
- Q.3** (a) Explain following instructions of 8051 family microcontroller: MOVX, XCH, RRC, DAA, JBC, NOP, RET **07**  
(b) Write a program to generate a square wave of 2KHz frequency on pin P1.5. Take XTAL=11.592MHz. Use Timer-0 in mode-1. **07**
- Q.4** (a) Write 8051 C -program to convert ASCII code of '4' and '7' to packed BCD and display them on port P1. **07**  
(b) Write an ALP using interrupt, in which 8051 gets data from P1 and sends it to P2 continuously while incoming data from serial port is sent to P0. Assume XTAL =11.592 MHz. Set Baud rate of 9600. **07**
- OR**
- Q.4** (a) Write a program for 8051 to copy block of 10 bytes data from 35H to 60H. **07**  
(b) Explain with necessary sketch, interfacing the LCD with 8051 and write a C program to Display "WELCOME" in the first line and in centre of the 16X2 line display. **07**
- Q.5** (a) Explain interfacing of stepper motor with microcontroller. Write program to rotate stepper motor in clockwise direction continuously in full step mode. **07**  
(b) Explain with diagram of interfacing, ADC 0804 in external clock mode interfaced with 8051. Write steps to program ADC 0804. **07**
- OR**
- Q.5** (a) Discuss RTC interfacing with 8051. Write program to get values of hour, minute and second from RTC to RAM location 20h, 21h and 22h respectively. **07**  
(b) Interface the DAC 0808 chip to port-1 of 8051 microcontroller. Write an ALP to generate sine wave **07**

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