

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2150306****Date: 03/06/2019****Subject Name: Microcontroller & Interfacing (Biomedical)****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.

		MARKS
Q.1	(a) List the features of 8051.	03
	(b) Define the following terms 1) Stack Pointer 2) Polling	04
	(c) Draw and explain the architecture of 8051 microcontroller in detail.	07
Q.2	(a) What is the significance of EA pin?	03
	(b) Draw the Data memory and Program memory organization in 8051.	04
	(c) Explain the following terms of C language in detail. 1) Local Variable 2) Global Variable 3) Arithmetic Operator 4) Logical Operator	07
	OR	
	(c) With neat schematic show how will you interface 32K RAM & 64K ROM with 8051 Microcontroller.	07
Q.3	(a) 1) Why all pins of a port are loaded with value "FF" before using it? 2) Justify why the crystal oscillator frequency in 8051 is chosen as 11.0592Mhz	03
	(b) Draw and explain the format of TMOD register of 8051.	04
	(c) Explain the Timer operation of 8051 using appropriate diagram.	07
	OR	
Q.3	(a) What are the types of serial communication?	03
	(b) List the Interrupt sources in 8051. What is the default priority (High to Low) of the interrupts in 8051?	04
	(c) With the diagram explain how 8051 interfaced to external memory.	07
Q.4	(a) Explain the PUSH & POP Operation with the help of example.	03
	(b) Create a square wave of 50% duty cycle the P2.1 bit. Timer 0 is used to generate the time delay.	04
	(c) Explain the Branch instruction with the help of examples.	07
	OR	
Q.4	(a) Justify why C Language is widely used for Embedded Programming? Enlist the various data types used in C.	03
	(b) Write a c program to toggle the bits of P1 ports continuously with a 250ms delay.	04
	(c) Write a c Program to indicate the "Microcontroller" on LCD. Also draw the schematic diagram.	07
Q.5	(a) Define the following loops with the help of example. 1) If else 2) While 3) For	03

- (b) Write an ALP to multiply the data in RAM location 20H by the data in RAM location 10H. Put the result in RAM location 19H(MSB) and 1AH(LSB). **04**
- (c) Assume that XTAL = 11.0592 MHz, write a program to generate a square wave of 2 kHz frequency on pin P2.5. (Timer 1, Mode 0) **07**

OR

- Q.5** (a) Calculate the delay. **03**

```
CLR    P2.2
MOV    TMOD, #01
HERE:  MOV    TL0, #3EH
        MOV    TH0, #B8H
        SETB   P2.2
        SETB   TRO
AGAIN:  JNB    TF0, AGAIN
        CLR    TR0
        CLR    TF0
        CLR    P2.2
        SJMP   HERE
```

- (b) Write a C Program to interface relay with 8051. **04**
- (c) Write a C Program to Interfacing DC Motor with 8051 using L293D. Also shows the schematic diagram of interfacing. **07**

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