# PARUL UNIVERSITY
## FACULTY OF ENGINEERING & TECHNOLOGY
### B.Tech. Summer 2022 - 23 Examination

Semester: 4                                                    Date: 24/03/2023
Subject Code: Microprocessor and Microcontroller with it's Interfacing     Time: 2:00pm to 4:30pm
Subject Name: 203113257                                       Total Marks: 60

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**Instructions:**
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Objective Type Questions** - (Each of one mark)                                **(15)**

1. Why 8085 processor is called an 8 bit processor?

   a) Because 8085 processor has 8 bit ALU     b) Because 8085 processor has 8 bit data bus

   c) a & b.                                    d) None

2. What is the most appropriate criterion for choosing the right microcontroller of our choice?

   a) speed                                     b) availability

   c) ease with the product                     d) all of the mentioned

3. What is clock frequency for 8085?

   a) 30MHz                                     b) 0.3MHz

   c) 300MHz                                    d) 3MHz

4. The following Five Instructions were executed on an 8085 microprocessor.

   MVI A, 33H

   MVI B, 78H

   ADD B

   CMA

   ANI 32H

   The accumulator value immediately after the execution of the fifth instruction is

   a) 00H                                       b) 11H

   c) 10H                                       d) 32H

5. For the below mentioned 8051 assembly code Time elapse:

   MOV R0,#100

   Part1: MOV R1, #50

   Part2: MOV R2, #248

   Part3: DJNZ, Part3

       : DJNZ, Part2

       : DJNZ, Part1

   Assume: Microcontroller is running at 12MHz frequency and 1 Machine Cycle is having 12

   clock cycles. MOV takes 1 MC and DJNZ takes 2 MC. Calculate time required for execution of

   Part1

   a) 2495600μs                                 b) 2496300μs

   c) 2495300 μs                                d) 2496600μs

6. The data pointer (DPTR) register is of _____ bits.

7. Microcontrollers are normally less expensive than microprocessor? True/False

8. What are input & output devices?

9. Define Interrupt

10. Microprocessor is the _____ of the CPU which perform the entire computation task.

11. Explain the difference between carry and overflow.

12. Find the contents of register A after the following code

   MOV A, #37H

   XRL A, #0CAH

13. Write time delay function for 100ms
14. What is the difference between the sbit and bit data types?
15. Which pin is used for reset in 8051?

**Q.2** Answer the following questions. (Attempt any three)                                    **(15)**
   A) Draw and explain the architecture of 8051.
   B) Classify and describe addressing modes of 8051 in detail with example.
   C) Write an 8051 C program to toggle bits of P1 ports continuously with a 250 ms.
   D) Explain SBUF and SCON Register. Write a program for the 8051 to transfer letter "A" serially at 9600 baud, continuously.

**Q.3** A) Draw pin diagram of 8085 and explain each pins in detail.                          **(07)**
   B) Write Steps for Timer Mode 1 Programming. Write a program to generate a square wave of 50      **(08)**
   kHz frequency on pin P2.3. Assume XTAL = 11.0592 MHz
                                         **OR**
   B) Explain Timer Mode and Timer Control registers in details with diagram.                 **(08)**

**Q.4** A) A door sensor is connected to the P1.1 pin, and a buzzer is connected to P1.7. Write an 8051 C      **(07)**
   program to monitor the door sensor, and when it opens, sound the buzzer. You can sound the buzzer
   by sending a square wave of a few hundred Hz.
                                         **OR**
   A) Write a program for AT89C51 chip toggle all the bits of P0, P1, and P2 every 1 second. Assume      **(07)**
   crystal frequency as 11.0592MHz. Show delay Calculations.
   B) Explain Program Status Word in details.                                                 **(08)**
   Solve the following programs and show the status of bits in PSW.
      1. Show the contents of the PSW register after the execution of the following instructions
         MOV A, #9CH
         ADD A, #64H
      2. Show the contents of the PSW register after the execution of the following instructions
         MOV A, #0C2H
         ADD A, #0FDH