Printed pages:2 **Programme (UG)/ 4th Semester/ UECE 403**

2025

Microcontrollers

Full Marks : 100

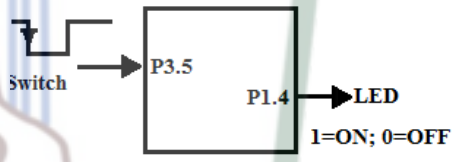
Time : 3 hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

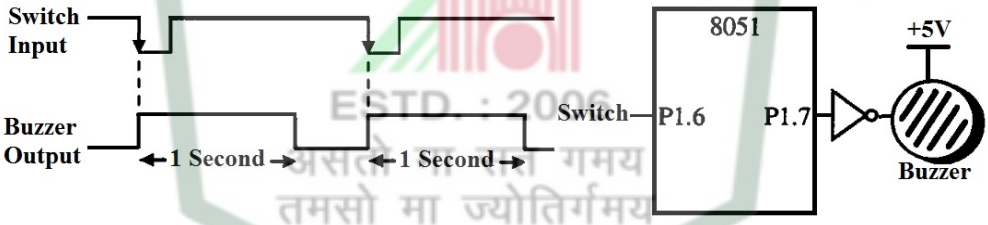
1 a) Write an assembly program for copying a block of data as shown in the diagram. [6]

b) Write a subroutine for detecting the High to Low edge at P3.5 and glow the output device at P1.7 for 500µs. Repeat the process for ever. [8]



c) Write a program to send a data byte in serial format with LSB leaving out first. [6]

2 a) [8]

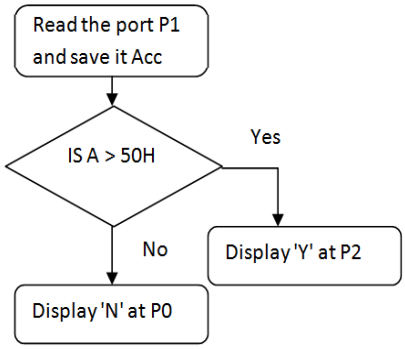


Write an assembly program for the following task: For a HIGH-to-LOW transition at the input port P1.6, the buzzer should continue the buzzing for 1 second at P1.7 as shown in Figure .

b) Write a C program to send the messages "Need for Speed" to the serial port with a Baud rate 9600, in mode 1. Assume that XTAL = 11.0592 MHz. [10]

c) Find the maximum delay generated using Timer Mode 1 and 2. Assume crystal frequency is i) 12 MHz, and ii) 16 MHz [2]

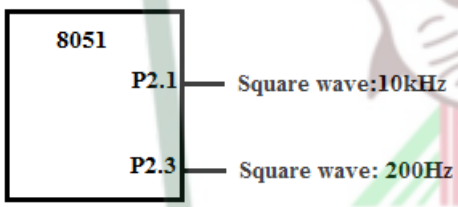
3 a) Write an assembly program for task shown in the flow chart below. [10]



b) Write a program to perform following 2 tasks using internal interrupts: [10]
Create square wave at P1.2 of 10kHz and read a port P0, display the same at P2.

4 a) Store the string "EARTH MATTERS" in the code memory address 100H onwards. Write a program to read the string, one character at a time and send it to port P1. Insert a delay of 500μs in between each character sent. [10]

b) Write a program to perform following 2 tasks using internal interrupts: [10]



5 a) Read the contents of ports P0, P1 and transfer their contents serially one after the other continuously at Baud rate 4800 in mode 1. [10]

b) Draw the timing diagram and explain the memory read operation of an 8bit microprocessor. [10]

6. a) Write short note on: Direct Memory Access [5]

b) Draw the diagram of read-write memory with size 2048 Bytes which is interfaced directly to a Microprocessor(8 bit Data bus, 16bit Address bus) [5]

c) Write an 8051 C program to get the status of bit port P0.3, complement it and send it to P0.5 continuously. [5]

d) Write a delay subroutine with that runs for 1000 times with assembly. [5]

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