Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
End Semester Examination: October 2023
Faculty: Science and Technology

Program: BScComp05 **Semester: III** **SET: B**
Program (Specific):B.Sc.(Computer Science) **Course Type: CC**
Class: S.Y.B.Sc. Comp. Sc. **Max. Marks: 35**
Name of the Course: Microcontroller Architecture and Programming
Course Code: 23-ELC-231
Time: 2Hr
Paper: I

Instructions to the candidate:

1) *There are 4 sections in the question paper. Write each section on separate page.*
2) *All Sections are compulsory.*
3) *Figures to the right indicate full marks.*
4) *Draw a well labelled diagram wherever necessary.*

SECTION: A

Q1) Multiple Choice Questions. **5**

1. **Address bus of 8051 µC is _____.**
   a. **4 –bit** **b. 8-bit** **c. 16-bit** **d. 32-bit**

2. **On-chip ROM is _____.**
   a. **No ROM** **b.2KB** **c. 64KB** **d.4KB**

3. **In 8051 µC, the register used to run the Timers is named as _____.**
   a. **TMOD** **b. SCON** **c. TCON** **d.IE**

4. **Mode 2 of timer uses_____ timer to load initial count.**
   a. **Lower 8 -bit** **b.T0** **c. T1** **d. upper 8 bit**

5. **_____number of port pins are required to interface stepper motor with 8051 µC.**
   a. **Four** **b. single** **c. Eight** **d. Two**

Q2) Very short answer questions. (Attempt any 4/6) **4**

1. **Define an Assembler Directive.**
2. **Explain Use of Interrupt Enable Register (IE).**
3. **Write the name of data register for serial communication in 8051 µC.**
4. **What is the size of the Data Pointer register .**
5. **Write default direction of ports.**
6. **Port 2 is used to carry upper byte of address for external memory: Write True/False.**

SECTION: B

Q3) Short answer questions (Attempt any 4/6) 8

I) Find machine cycle frequency for 12 MHz crystal connected externally.
II) Write the role of T0 and T1pin of 8051µC.
III) Explain "Maximum size of external memory interfaced to 8051 µC is 64KB "
IV) Draw simple diagram for LED anode interface to 8051 µC.
V) Identify the addressing mode of given instructions. 1. PUSH A 2. MOVX A,@R_0
VI) Find the result of execution of instruction for given [A]=2CH & [B]=05H instruction:
1.MUL AB 2. RLA

SECTION: C

Q4) Short answer questions (Attempt any 4/6) 8

I) Mention use of ALE signal .
II) Write a result for execution of program segment below.

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Again: JNB P1.0,Again
       MOV A,P2
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III) Identify the type of instruction : 1.DAA 2. ORL A,#0A4h
IV) Define Assembler and assembler directives.
V) Write an assembly language program to add eight sequential locations of RAM starting from 63H location.
VI) Explain mode 1 counter operation in 8051 Microcontroller.

SECTION: D

Q5) Long answer type Questions (Attempt any two of the following (2/4)) 10

1. **Explain Internal RAM organization.**
2. **Draw diagram to interface Common cathode 7-segment display to 8051 µC and write a program to write numbers 1 to 9 sequentially.**
3. **Write a program to generate 500Hz frequency on port pin P2.0. Crystal frequency of 12 MHz. Use timer 0 in mode 1 .**
4. **Draw Block diagram to interface external 32KB ROM to 8051 µC .**

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