



**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023**

Semester : Semester IV - 2021

Course Code : EEE2005

Course Name : Sem IV - EEE2005 - Microprocessor and Microcontrollers

Program : EEE

Date : 12-APR-2023

Time : 2PM - 3.30PM

Max Marks : 50

Weightage : 25%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS

(5 X 2 = 10M)

1. The microprocessor is essential to the daily operation of industrialised civilizations. A microprocessor is a chip-based digital instrument that can retrieve instructions from memory, decode and perform them, and return results. The fundamental functional components of a microprocessor are as follows:
 - a) ALU (CO1) [Knowledge]
 - b) Array of Registers
 - c) Control Unit
 - d) All of the above
2. Tristate logic is used by all components in the microprocessor-based system. There will be three logic tiers accessible in devices with Tristate logic: High State, Low State, and High Impedance state. The tristate device is typically in a high impedance state, and its ports are physically linked in the system network but..... isolated.
 - a) Mechanical (CO1) [Knowledge]
 - b) Physically
 - c) Electrically
 - d) All of the above
3. Depending on the number in the accumulator, the Flag register of the 8085 microprocessor will hold either 0 or 1. The ALU's arithmetic and reasoning processes have an effect on the flags. It's possible to find the signal register referred to as "Status register" or "condition code register," too. Flag register bit 7 is set to signify.....
 - a) Carry flag (C) (CO1) [Knowledge]
 - b) Zero flag (Z)
 - c) Parity flag (P)
 - d) None of the above

4. If the write command fails, what happens to the carry, supplemental carry, and parity flag?
MOV A,#9C
ADD A,#64H
a) CY=0,AC=0,P=0 (CO2) [Knowledge]
b) CY=1,AC=1,P=0
c) CY=0,AC=1,P=0
d) CY=1,AC=1,P=1
5. The off-chip data and related identifiers can be accessed with which of the following commands?
a) MOVC & MOVY (CO2) [Knowledge]
b) MOVY & MOVB
c) MOVZ & MOVA
d) MOVX & MOVC

PART B

ANSWER ALL THE QUESTIONS

(2 X 10 = 20M)

6. Without microcontrollers, today's society would be unthinkable. Microcontrollers can be found anywhere, whether you're traveling, using a computer, or preparing a cup of coffee. Because of the components that comprise it, a microcontroller is sometimes referred to as a "little computer." Microcontroller devices contain all of the following components: random access memory (RAM), read-only memory (ROM), input/output interfaces, the internal oscillator, EEPROM, and so on. Using the required diagram, explain the 8051 architecture, demonstrate the correct assembly of the above components in the 8051 microcontroller, and discuss the microcontroller's important features.
(CO1) [Comprehension]
7. The operands of the instructions may be kept in RAM or in the registers of the central processor unit. If the argument is placed into main memory, the operand field of the instruction will contain a reference to that address. The argument's location can be stated in a number of methods. The different methods in which the command defines the location of the operand are referred to as addressing choices. Discuss the different methods of accessing the material using appropriate examples.
(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION

(1 X 20 = 20M)

8. An instruction set is defined as a "set of machine language commands for a central processing unit (CPU)." An operation code (op-code) is followed by zero, one, or two characters of operands to form a computer command. The op-code specifies the sort of operation to be done, while the operands specify the data's source and destination. The operand can be any of the following: the data value, a CPU register, a memory address, or an I/O interface. Discuss in brief the different classifications of instruction sets, with instances for each category of instruction set, and also enumerate the instructions in 8051, along with their function, mnemonics, and descriptions.
(CO2) [Application]