PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023

Semester : Semester IV - 2021
Course Code : EEE3051
Course Name : Sem IV - EEE3051 - Microcontroller Applications
Program : ISR

Date : 17-APR-2023
Time : 11.30AM - 1.00PM
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 3 = 15M)**

1. How are the bits of the register PSW affected if we select Bank 2 of 8051?
   a) PSW.5=0 and PSW.4=1   (CO1) [Knowledge]
   b) PSW.2=0 and PSW.3=1
   c) c) PSW.3=1 and PSW.4=1
   d) PSW.3=0 and PSW.4=1

2. 8051 series has how many 16 bit registers?
   a) 2   (CO1) [Knowledge]
   b) 3
   c) 1
   d) 0

3. How many bytes of bit addressable memory is present in 8051 based microcontrollers?
   a) 8 bytes   (CO1) [Knowledge]
   b) 32 bytes
   c) 16 bytes
   d) 128 bytes

4. Which instruction is used to check the status of a single bit?
   a) MOV A,P0   (CO2) [Knowledge]
   b) ADD A,#05H
   c) JNB P0.0, label
   d) CLR P0.05H

5. What is the advantage of register indirect addressing mode?
   a) it makes use of registers R0 and R1   (CO2) [Knowledge]
   b) it uses the data dynamically
   c) it makes use of operator @
   d) it is easy

PART B

ANSWER ALL THE QUESTIONS   (4 X 5 = 20M)

6. Identify the mistakes in the below instructions of 8051 and write the correct instruction with valid comments.
   MOV A, #455H
   MOV R4, R1
   MOV DPL, #4321H
   MOV DPTR, #67564H
   MOV A, @R3
                                                                             (CO1) [Comprehension]

7. Write the status of A, B, R0, R1, R2, R3 and address location 33H after the execution of the below program.
   MOV R0, #34H
   MOV R1, #12H
   MOV R2, #78H
   MOV R3, #56H
   MOV A, R0
   MOV B, R2
   MUL AB
   MOV 33H, A
   END
                                                                             (CO1) [Comprehension]

8. Write a program to copy the value 55H into RAM memory locations 40H to 41H using (a) direct addressing mode, (b) register indirect addressing mode without a loop.
                                                                             (CO2) [Comprehension]

9. Write the comments for each of the instructions of 8051 and also, write the output of the program.
MOV R0, #34H
MOV R1, #12H
 MOV R2, #0DCH
MOV R3, #0FEH
CLR C
MOV A, R0
ADD A, R2
MOV 22H,A
MOV A, R1
ADDC A, R3
MOV 21H, A
MOV 00H, C
END

(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION   **(1 X 15 = 15M)**

10. Write an assembly language program to subtract two 8 bit number and store at 40H location. Also, demonstrate the theoretical caculation of subtracting two 8 bit numbers and write the comment for each of the 8051 instructions. The numbers are BDH and 8AH.

(CO2) [Application]