

**BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2018 COURSE)**  
**S.Y.B.Sc.(Computer Science) Sem-IV : WINTER :- 2021**  
**SUBJECT: 8051 MICROCONTROLLER**

Day : Friday  
Date 28-01-2022

W-20107-2021

Time : 02:00 PM-05:00 PM  
Max. Marks: 60

**N.B**

- 1) All the questions are **COMPULSORY**.
- 2) Draw neat- labelled diagrams **WHEREVER** necessary.
- 3) Figures to the right indicate **FULL** marks.

- Q.1** Answer **ANY TWO** of the following. **(12)**
- a) Explain the PSW register of 8051 microcontroller.
  - b) Explain DAC interface with diagram. Also write a C program to interface DAC to 8051 microcontroller.
  - c) Explain the following addressing modes with examples:
    - i) Direct addressing mode
    - ii) Register addressing mode
    - iii) Immediate addressing mode
- Q.2** Answer **ANY TWO** of the following. **(12)**
- a) Draw the block diagram for 8051 microcontroller. State its features.
  - b) Explain PUSH and POP instructions with one example of each.
  - c) Draw the diagram of stepper motor interface to 8051 microcontroller. Also write a C program for the same.
- Q.3** Answer **ANY TWO** of the following. **(12)**
- a) Explain the following instructions with one example of each:
    - i) RRC A
    - ii) ORL A, R0
    - iii) DIV AB
  - b) Explain the interfacing of external RAM memory with 8051 microcontroller.
  - c) Explain the functions of each bit of SCON register.
- Q.4** Answer **ANY THREE** of the following. **(12)**
- a) State and explain any four assembles directives used in assembly language programming.
  - b) Explain the interrupts of 8051 microcontroller in brief.
  - c) i) Indicate mode and timer selected for the following: MOV TMOD, #01H  
ii) Find the timers clock frequency and period for 8051 based system with crystal frequency of 12 MHz.
  - d) Explain the following pin functions:
    - i) XTALI and XTAL2
    - ii)  $\overline{EA}$
    - iii) ALE
    - iv) RESET
- Q.5** Answer **ANY FOUR** of the following.. **(12)**
- a) Name the addressing modes of the following instructions:
    - i) XRL A, @R1
    - ii) MOV A, #82H
    - iii) ADD A, 30H
  - b) State three points of difference between microcontroller and microprocessor.
  - c) Write an assembly language program for the addition of two 8- bit numbers.
  - d) How many timers are there in 8051 microcontroller? Specify their names and mention the modes of timer operation.
  - e) Find the contents of register A after each of the following instruction is executed  
MOV A, # 56H  
RR A  
SWAP A
  - f) Write an assembly language program to convert Hexadecimal number to its Decimal equipment.

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