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DCEL503

Reg. No.

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V Semester B.Sc. Degree Examination, March/April - 2024

**ELECTRONICS**

**Embedded controllers**

**(NEP Scheme 2020)**

**Paper : VI**



**Time : 2½ Hours**

**Maximum Marks :60**

**Instructions to Candidates:**

**Answer ALL the questions from Part--A, any FOUR questions from Part-B and any FOUR questions from Part-C.**

**Note: It is required to answer all the questions of Part-A in any one page and to be answered only once. In this Part, answering the same question multiple times will not be considered for evaluation.**

**PART-A**

**Answer All the questions.**

**(12×1=12)**

1. i) \_\_\_\_\_ architecture is followed in general purpose microprocessors.
  - a) Harvard
  - b) Von Neumann
  - c) Both (a) and (b)
  - d) None of the above
- ii) Which of the following is the hardware components of embedded system?
  - a) Computer processor
  - b) Device peripheral
  - c) Computer Memory
  - d) All the above
- iii) 8051 microcontroller has \_\_\_\_\_ number of I/O Pins
  - a) 4
  - b) 8
  - c) 16
  - d) 32
- iv) After the execution of PUSH instruction in 8051, the stack pointer is
  - a) incremented by 1
  - b) decremented by 1
  - c) incremented by 2
  - d) decremented by 2

**[P.T.O.]**

- v) Which of the following is not a data transfer instruction?
- a) MOV                                  b) PUSH
- c) DAA                                 d) POP
- vi) The interrupt that has the lowest priority among the following is
- a) IEO                                  b) TF1
- c) TFO                                 d) RI
- vii) PIC18F458 is \_\_\_\_\_ bit Microcontroller
- a) 8                                      b) 16
- c) 32                                    d) 64
- viii) Which instruction is used to clear single bit in PIC18F458?
- a) BSF                                 b) BCF
- c) BTFS                                d) BTFS
- ix) Timer 1 module of PIC18F458 uses
- a) 8 bit/16 bit timer/counter with 8 bit prescaler
- b) 16 bit timer/counter
- c) 8 bit timer/counter with 8 bit period register
- d) 8 bit timer/counter
- x) SPI stands for
- a) Serial Peripheral Interface
- b) Side Peripheral Interface
- c) Serial Parallel Interface
- d) None of the above
- xi) Magnitude of Unsigned char data type in embedded C is
- a) 0 to 256                              b) 0 to 255
- c) -128 to +127                        d) -127 to +128



xii) The filters in signal conditioning system is used to

- a) Remove noise and fluctuation
- b) Increase noise in system
- c) Reduce the signal strength
- d) None of the above.

### PART-B

Answer any FOUR questions.

(4×7=28)

- 2. a) What is Microprocessor? Compare RISC and CISC processor architecture. (5)
- b) Mention any four design parameters of embedded system (2)
- 3. Explain the internal memory organization in 8051 microcontroller.
- 4. With an example, explain the different Addressing modes of 8051.
- 5. Explain short, long and relative jump instructions of 8051 with an example.
- 6. With a block diagram, explain the architecture of PIC18F458 microcontroller.
- 7. With a diagram, explain the interfacing of LM35 to P I C 18F458.

### PART-C

Answer any FOUR questions.

(4×5=20)

- 8. Explain the bit pattern of IE register in 8051.
  - 9. Write an assembly language program to add two 8-bit Number and store the results in subsequent memory locations.
  - 10. Write an assembly language program to find the largest in an array of N 8bit numbers.
  - 11. Write an assembly language program to find the given number is prime or not.
  - 12. Write any five peripheral features of PIC18F458 microcontroller.
  - 13. Write the program and circuit to interface Switch and LED to P I C microcontroller.
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