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17NT72

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Microcontrollers and Interface

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Write a neat functional block diagram, explaining the architecture of 8051 in brief. **(10 Marks)**
   b. Differentiate between RISC and CISC CPU architectures. **(06 Marks)**
   c. Explain the concept of Von-Neumann architecture in brief. **(04 Marks)**

OR

2 a. With a Pin out description for pin diagram of 8051 architecture, explain the function of each pin in brief. **(10 Marks)**
   b. Write a short note on External Memory Interfacing. **(06 Marks)**
   c. Explain the concept of Harvard architecture in brief. **(04 Marks)**

Module-2

3 a. Explain immediate, register and direct addressing modes with examples. **(10 Marks)**
   b. Write short notes on long addressing, bit direct addressing and relative addressing. **(10 Marks)**

OR

4 a. Explain bit inherent, addressing, indexed addressing and absolute addressing in brief with example. **(10 Marks)**
   b. Write short notes on subroutines and data types of 8051 microcontroller. **(10 Marks)**

Module-3

5 a. Explain the arithmetic instructions in brief along with sub classified ADD and SUB group of instructions with examples. **(08 Marks)**
   b. Mention the different types of branch instructions and explain each with an example. **(08 Marks)**
   c. Write an ALP program to start A/D conversion and store the results in registers. **(04 Marks)**

OR

6 a. Mention the different types of 8051 instructions and explain the data transfer instructions with an example. **(08 Marks)**
   b. Write short notes on subroutine CALL and RET instructions as well as bit manipulation instructions. **(08 Marks)**
   c. Write an ALP program to generate square wave by interfacing DAC08. **(04 Marks)**

Module-4

7 a. Explain about pic microcontroller and describe the specification of microcontroller PIC16F84 in brief. **(08 Marks)**
   b. Mention the types of oscillators and explain two types of oscillators of microcontroller PIC16F84 in detail. **(08 Marks)**
   c. Discuss the arithmetic and logic instructions of PIC16CXX microcontroller family. **(04 Marks)**

OR

8 a. With instruction pipeline flow diagram, explain the pipeline concept of microcontroller PIC16F84 in detail.
(08 Marks)

b. Define interrupt and explain the working of INTCON register with neat schematic.
(08 Marks)

c. Discuss data transfer instructions of PIC16CXX microcontroller family.
(04 Marks)

Module-5

9 a. Overview the classifications of AVR family in brief.
(08 Marks)

b. Explain the concept of AVR status register with a neat schematic.
(08 Marks)

c. Write a short note on assembler directives.
(04 Marks)

OR

10 a. Explain LDS and STS instructions with data memory in brief.
(08 Marks)

b. Explain the concept of general purpose registers in the AVR involving data type of 8-bit AVR microcontroller.
(08 Marks)

c. Write a short notes on AVR data types.
(04 Marks)

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