

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FOURTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023 ELECTRONICS AND COMMUNICATION ENGINEERING

(2020 SCHEME)

Course Code : 20ECT206

Course Name: Computer Architecture and Microcontrollers

Max. Marks : 100

Duration: 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. Distinguish between RISC and CISC architecture.
2. With example, explain floating point number representation.
3. Write short notes on the PSW register of 8051 microcontrollers.
4. List the Special Function Registers of 8051 microcontrollers.
5. Write short notes on C data types for 8051 microcontrollers.
6. Write an 8051 C program to toggle all the bits of port 1 continuously.
7. Describe the timer/counter logic of 8051
8. What is the difference between a compiler and an interpreter? Give an example of a language that uses each?
9. Differentiate RAM and ROM
10. Define cache hit and cache miss.

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Explain the various steps that a processor should perform to execute any instruction (8)
b) Explain the general internal architecture of a processor with a neat diagram. (6)

OR

12. a) Explain with example the algorithm for binary Multiplication (8)
b) Differentiate Von Neumann and Harvard computer architectures. (6)

MODULE II

13. a) Draw and explain the block diagram of 8051 microcontroller (8)
b) Describe addressing modes of 8051 microcontroller with examples. (6)

OR

14. a) Describe Data transfer and Boolean instruction set of 8051 microcontroller with examples. (8)
- b) Illustrate the structure and operations of PORT 0. (6)

MODULE III

15. a) Write a program for 8051 microcontroller, to interface a stepper motor. (8)
- b) Write an assembly language program to find the square and square-root of an 8-bit number. (6)

OR

16. a) With suitable diagrams explain the interfacing of ADC 0808 with 8051 microcontroller. (8)
- b) Write an assembly language program to arrange 10 numbers in ascending order. (6)

MODULE IV

17. a) Write a program to send the string "ECE" serially at 2400 baud rate, with 8 data bits, 1 start bit(0) and 1 stop bit (1). (8)
- b) With necessary diagrams explain ARM 7 core architecture. (6)

OR

18. a) Write a program to generate a delay of 1 sec using Timer1. Assume clock frequency of 12 MHz. (8)
- b) Write short notes on the flag register of ARM 7 (6)

MODULE V

19. a) With necessary diagrams explain Virtual memory address translation and TLB. (8)
- b) Differentiate between SRAM and DRAM. (6)

OR

20. a) Draw the typical block diagram of a DMA controller and explain how it is used for direct data transfer between memory and peripherals. (8)
- b) Explain associative mapping of cache. (6)
