Register No: ……………………   Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)
(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)
FOURTH SEMESTER B.TECH DEGREE EXAMINATION(R,S), MAY 2024
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. Represent 228 in 32 bit floating point representation 2.

2. Explain the function of ALU and control unit in a computer.

3. Write down the functions of following instructions. (a) ANL A,@R1 (b)RLC A (c)MOVX A,@DPTR

4. Define an embedded system.

5. Write an assembly language program to print fibonacci series.

6. Write an 8051 C program to send values 00-FF to port1.

7. Draw the ARM programmer's model.

8. Define cross compiler.

9. Differentiate temporal and spatial locality of reference.

10. Explain the working of static RAM cell.

PART B
(Answer one full question from each module, each question carries 14 marks)
MODULE I

11. (a) Explain how arithmetic right shift is performed.   4
      (b)Apply shift and add method for performing multiplication operation of two binary numbers .   10

OR

12. (a) Explain how an instruction is exceuted in a processor?   7
      (b) Sketch internal architecture of a general processor and explain various components.   7

MODULE II

13. (a) Explain the architecture of 8051.   10
      (b) Differentiate indirect and direct addressing modes of 8051.   4

OR

14. (a) Explain interrupt handling method of 8051.   7
      (b) Describe the arithmetic and logical instructions of 8051.   7

MODULE III

15. (a) Write an assembly language program in 8051 to find largest from an array of five numbers.   7
      (b) Write an assembly language program in 8051 to add two matrices .   7

OR

16. (a) Draw the interfacing diagram of stepper motor with 8051 .   5
      (b) A switch is connected to pin P2.7.Write a program to monitor the status of SW and perform the following.   9

(i) If SW=0,the stepper motor moves clockwise.

(ii) If SW=1,the stepper motor moves anti-clockwise.

MODULE IV

17. (a) Differentiate timer and counter. 4

(b) Generate the square of 75% duty cycle.Assume crystal frequency=11.0592MHz.Use timer 0 mode 1 programming. 10

OR

18. (a) Draw and explain SCON register. 5

(b) Write a program for 8051 to transfer "YES" serially and continously at 1200 baud rate,8 bit data,1 stop,start bit. 9

MODULE V

19. (a) Explain set-associative mapping. 7

(b) Explain the ways for improving cache performance. 7

OR

20. (a) Explain how virtual address is translated to physical address. 10

(b)TLB speed up the memory access.Justify your answer 4

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