

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 60009

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Fifth Semester
Information Technology
U19IT514 – MICROPROCESSOR AND MICROCONTROLLER
(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Define the concept of logical and physical addresses in 8086.	2	K1	CO1
2.	What is the purpose of the flag register in the 8086 microprocessor?	2	K1	CO1
3.	What is the function of control word register in 8255A?	2	K1	CO2
4.	List the modes of operation of 8253 programmable interval timer.	2	K2	CO2
5.	List the function of the stack pointer in 8051.	2	K1	CO3
6.	Write is the function of the timers in the 8051 microcontroller.	2	K2	CO3
7.	Mention the concept of time delay generation in 8051.	2	K4	CO4
8.	Write the difference between software and hardware interrupts in 8051.	2	K1	CO4
9.	What are the key characteristics of a RISC processor?	2	K2	CO5
10.	What is the difference between firmware and software in embedded systems?	2	K4	CO5

PART – B

		(5 x 13 = 65 Marks)		
Q.No.	Questions	Marks	KL	CO
11.	a) Describe the instruction format of 8086 microprocessor. Explain different types of addressing modes with examples. (OR)	6 7	K3	CO1
	b) Draw the Memory Read timing diagram of 8086 in Minimum mode. Describe the status of the relevant signals during each clock period.	13	K1	CO1
12.	a) Explain the working of 8251A serial communication interface. Discuss its various modes of operation. (OR)	13	K2	CO2
	b) Describe the architecture of 8279 programmable keyboard/display interface. Explain its various control and status registers.	13	K3	CO2
13.	a) Explain the instruction set of 8051 microcontroller with suitable examples. (OR)	13	K2	CO3
	b) Describe the memory organization of 8051 microcontroller. Explain the different types of memory available in 8051.	7 6	K1	CO3
14.	a) i. Write an assembly language program for 8051 to generate a square wave on a particular output pin. ii. Explain the code logic and timing considerations. (OR)	7 6	K6	CO4
	b) Explain the concept of interrupts in 8051. Describe the interrupt structure and handling mechanism.	13	K3	CO4
15.	a) Discuss the different categories of embedded systems with suitable examples. (OR)	13	K1	CO5
	b) Explain the design considerations for developing an embedded system. Discuss the trade-offs involved in selecting an embedded processor.	13	K3	CO5

PART – C

		(1 x 15 = 15 Marks)		
Q.No.	Questions	Marks	KL	CO
16.	a) Design an assembly language program for 8051 to implement a simple traffic light controller. Explain the logic and timing requirements of the program. (OR)	15	K3	CO4
	b) Discuss the architecture of a typical embedded system. Explain the role of different components in the system. Provide an example of an embedded system application and its design challenges.	15	K6	CO5