



B.E DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Sixth Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U18ECI6202: Microcontrollers

COURSE OUTCOMES

CO1: Explain the architecture of 8051 microcontroller and develop C code for the given application.

CO2: Design and implement applications using 8051 microcontroller.

CO3: Describe the architecture of peripherals of ARM Cortex and write C code for the given Application.

CO4: Build and verify real time applications using microprocessor/microcontroller.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

- | | | |
|--|-----|-------------------|
| 1. Distinguish between the Microprocessor and Microcontroller | CO1 | [K ₂] |
| 2. Describe the two-power saving mode of operation in 8051 microcontroller. | CO2 | [K ₂] |
| 3. State the difference between a JMP instruction and CALL instruction 8051 microcontroller | CO2 | [K ₂] |
| 4. Write program to load accumulator with 5FH in the external data memory location 5AFCH using 8051. | CO2 | [K ₂] |
| 5. What is stack pointer (SP)? | CO1 | [K ₂] |
| 6. List out five difference in 8051 microcontroller and ARM processor. | CO3 | [K ₁] |
| 7. What is 3 stage pipe line in ARM 7? | CO3 | [K ₁] |
| 8. Mention 4 different data transfer Instruction used in ARM Cortex processor. | CO4 | [K ₂] |
| 9. Compare the code density between normal and THUMB mode instruction. | CO4 | [K ₂] |
| 10. What is the use of a watchdog timer in an embedded system? | CO3 | [K ₃] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

- | | | | |
|---|----|-----|-------------------|
| 11. a) Name and describe the special functions register available in 8051 microcontroller. | 6 | CO1 | [K ₂] |
| b) What is timer/Counter? Explain the 16 bit timer and 8 bit auto reload mode of 8051 micro controller. | 10 | CO2 | [K ₃] |

12.	a)	Describe the structure of four parallel ports in 8051 microcontrollers with necessary diagram.	10	CO1	[K ₂]
	b)	Write a program to toggle all the bits of P0 continuously using 8051 microcontrollers.	6	CO2	[K ₃]
13.		Illustrate the block diagram of the LCD interface with 8051 microcontroller and its operations.	16	CO2	[K ₄]
14.	a)	Write an 8051 ALP to find number of even numbers in an array.	8	CO2	[K ₄]
	b)	List the different Instruction sets of 8051 microcontroller with example instruction.	8	CO2	[K ₃]
15.	a)	Analyze the need for pipelining in advanced ARM architectures. Also, Explain the 5-stage pipelining in ARM with a neat sketch.	10	CO4	[K ₄]
	b)	Explain the operation modes and privilege levels in Cortex M3 Processor	6	CO4	[K ₃]
16.		With the neat diagram, Elaborate the architecture of ARM Cortex Processor in detail.	16	CO3	[K ₃]
