R22 Regulation *Subject code:4E6BC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Regular/Supplementary Examinations, April 2026

MICROPROCESSORS AND MICROCONTROLLERS

(EEE)

Maximum Marks: 60 Date:18.04.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	What is flag register? Mention any two flags.	1M	1	1
b)	How much memory can be interfaced with 8086 and why?	1M	1	2
c)	What is microcontroller?	1M	2	1
d)	Why is 11.0592MHz, an unusual frequency commonly used as the crystal frequency for 8051 microcontrollers?	1M	2	2
e)	What is memory mapped I/O?	1M	3	1
f)	Expand SPI and UART and mention one key feature of each	1M	3	1
g)	Draw the format of CPSR in ARM?	1M	4	1
h)	Explain the features of ARM.	1M	4	1
i)	Name the types of Cortex processors.	1M	5	1
j)	Give one example of OMAP series and mention its typical application area	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	a) Explain the functional blocks of 8086 with a neat diagram and describe how each unit works.	5M	1	2
	b) Explain the following Assembler Directives: i)ASSUME ii) ORG iii) DUP iv)END v)EQU	5M	1	3
	OR			
3	a) Compare the minimum and maximum mode operations of the 8086 microprocessors. Which mode is more suitable for simple single processor system?	5M	1	3
	b) Write an Assembly language program to sort the array of numbers in ascending order in 8086.	5M	1	3
4	a) Illustrate various addressing modes of 8051 with simple examples.	5M	2	3
	b) Discuss Bit addressable and Byte addressable special function registers of 8051.	5M	2	2
	OR			

5	a) Explain external interrupt handling in 8051 with suitable example. b) Draw and explain the below Special Function Registers: i) SCON ii) TCON	5M 5M	2 2	3 2
6	Explain the architecture of 8255 PPI and necessity of each block in detail.	10M	3	3
	OR			
7	a) Discuss various serial communication standards and its importance. b) Draw and explain Null modem connection with RS232C.	5M 5M	3 3	2 3
8	a) Write an ARM program to perform arithmetic operations and store the result in memory. b) Describe software interrupt instructions of ARM with an example.	5M 5M	4 4	3 2
	OR			
9	a) Explain ARM processor modes. b) Describe branch and load/store instructions in ARM.	5M 5M	4 4	3 2
10	a) Discuss features and applications of Cortex processors. b) Compare and contrast ARM Cortex and OMAP processors.	5M 5M	5 5	2 3
	OR			
11	Explain architecture of ARM Cortex processor.	10M	5	2