



R22 Regulation

Subject code: 4E6BC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Regular Examinations, May 2025

MICROPROCESSORS & MICROCONTROLLERS

(EEE)

Maximum Marks: 60

Date: 20.06.2025

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 the size of the flag register in 8086?	1M	1	L1
b)	Identify any one addressing mode used in 8086 with an example.	1M	1	L3
c)	How many I/O ports are available in 8051?	1M	2	L1
d)	Classify the types of interrupts in 8051.	1M	2	L4
e)	Explain how LCD is interfaced to 8051.	1M	3	L2
f)	What is the function of the 8255 PPI?	1M	3	L1
g)	Write a simple ARM instruction to load a value into a register.	1M	4	L3
h)	What does CPSR stand for and what is its role in ARM architecture?	1M	4	L1
i)	What does OMAP stand for?	1M	5	L1
j)	Write the difference between Cortex and traditional ARM architecture.	1M	5	L4

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	a) Write an assembly language program using 8086 to perform the addition of two arrays. b) Design a simple program using different addressing modes of 8086.	5M 5M	1 1	L3 L6
OR				
3	a) List and describe the various registers in 8086 microprocessor. b) Differentiate between the minimum and maximum mode of 8086 with signal descriptions.	5M 5M	1 1	L1 L4
4	a) Develop a program to generate a square wave using 8051 Timer. b) Explain the architecture of 8051 microcontroller and its memory organization.	5M 5M	2 2	L3 L2
OR				
5	a) Analyze how serial communication is handled in 8051 with interrupts. b) Create an 8051 program to interface an LED and blink it at regular intervals.	5M 5M	2 2	L4 L2

6	a) List the key features of 8255 PPI and its modes of operation. b) Compare I2C and SPI communication protocols in embedded systems.	5M 5M	3 3	L1 L4
OR				
7	a) Explain how ADC and DAC can be interfaced with 8051. b) Write a program to interface a stepper motor with 8086 using 8255.	5M 5M	3 3	L2 L3
8	Analyze how conditional execution enhances performance in ARM architecture.	10M	4	L4
OR				
9	a) Describe the pipeline structure of ARM and its advantages. b) Write a simple ARM assembly program using data processing and branching instructions.	5M 5M	4 4	L2 L3
10	a) List the applications of Cortex processors in embedded systems. b) Design an embedded application using the OMAP processor and explain its operation.	5M 5M	5 5	L1 L6
OR				
11	a) Demonstrate how pipeline architecture in Cortex processors improves performance. b) Evaluate the architectural differences between traditional ARM and Cortex processors.	5M 5M	5 5	L3 L5