



R22 Regulation

Subject code: 4E5DB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Regular Examinations, December 2024

MICROPROCESSORS AND MICROCONTROLLERS

(ECE)

Maximum Marks: 60

Date: 28.12.2024

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		CO	Bloom Tx
All the following questions carry equal marks (10X1M=10 Marks)			
1.a)	What is the purpose of memory segmentation in the 8086 microprocessor?	1	L1
b)	Draw the flag register of 8086 microprocessor.	1	L1
c)	How to configure counter/timer in 8051?	2	L1
d)	Draw the TMOD register in 8051	2	L2
e)	What is the purpose of an ADC in microcontroller interfaces?	3	L1
f)	Classify types of serial data transfer communication.	3	L1
g)	How many general-purpose registers are there in ARM architecture?	4	L1
h)	What are the key features of ARM architecture?	4	L1
i)	What are the key features of OMAP processors?	5	L1
j)	What are the primary applications of OMAP processors developed by Texas Instruments?	5	L1
Part-B			
Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
2	Illustrate and explain the architecture of the 8086 microprocessor. [10M]	1	L2
OR			
3	a. Describe the concept of segmented memory and discuss its advantages. [5M]	1	L2
	b. Enumerate the shift and rotate instructions available in the 8086 microprocessor, providing examples. [5M]	1	L3
4	a. Describe the memory organization of the 8051 microcontroller. [5M]	2	L2
	b. Create a program to multiply two 8 bit numbers using 8051 microcontroller. [5M]	2	L3
OR			
5	a. Illustrate the pin diagram of the 8051 microcontroller and provide a detailed explanation of the function of each pin [5M]	2	L2

	b. Describe the different addressing modes used in 8051 microcontrollers. [5M]	2	L2
6	a. Illustrate the function of SPI bus. [5M]	3	L3
	b. Explain interfacing of stepper motor with 8086 microprocessor. [5M]	3	L2
	OR		
7	a. Describe the function of I2C bus with neat diagram. [5M]	3	L2
	b. Explain the RS-232 standard and its features. [5M]	3	L2
8	Illustrate the architectural block diagram of the ARM processor. [10M]	4	L2
	OR		
9	a. Describe the three-stage pipeline used in an ARM processor. [5M]	4	L2
	b. Illustrate Branch instructions of ARM processor . [5M]	4	L2
10	a. What are the benefits of using Cortex processors? [5M]	5	L2
	b. Describe the architecture of the OMAP processor. [5M]	5	L2
	OR		
11	a. What are the advantages of OMAP processors? [5M]	5	L2
	b. Describe the architecture of a Cortex processor. [5M]	5	L2