

**R22**

Code No: 185DH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January - 2025

**MICROCONTROLLERS**

(Common to ECE, EIE)

Time: 3 Hours

Max. Marks: 60

**Note:** This question paper contains two parts A and B.

i) Part- A for 10 marks, ii) Part - B for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of ten questions (numbered from 2 to 11) carrying 10 marks each. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

**PART - A**

(10 Marks)

- 1.a) What is assembler? [1]
- b) What is the addressing mode of MOV AX, 55H (BX) (SI)? [1]
- c) List any four features of 8051 microcontroller. [1]
- d) List the 8051 instructions that affect the overflow flag. [1]
- e) Give the applications for synchronous serial communication. [1]
- f) Write about on board communication interfaces. [1]
- g) Give any two applications of ARM processor. [1]
- h) List out any two load and store instructions. [1]
- i) Give any two real time applications of OMAP processor. [1]
- j) Give different Registers and Special Registers in Cortex M3 processor. [1]

**PART - B**

(50 Marks)

- 2.a) Explain the physical memory organization in an 8086 microprocessor.
- b) Write an ALP for dividing two 8-bit numbers. [5+5]

**OR**

- 3.a) Explain the following pins of 8086.  
(i) HOLD (ii) TEST (iii) NMI
- b) Discuss in detail the various signals of 8086 with neat pin diagrams. [5+5]

- 4.a) Discuss about the organization of Internal RAM and Special function registers of 8051 Microcontroller in detail.
- b) Explain the control instructions of 8051 microcontroller. [5+5]

**OR**

- 5.a) Write short notes on external hardware interrupts of 8051 microcontroller.
- b) Using 8051 timer write a program for generating square wave of 100 ms and 50% duty cycle and explain. [5+5]

QA QA QA QA QA QA QA G

6.a) How to interface an LCD display with microcontroller? Explain how to display a character using LCD display?

b) Explain the on board interfacing of SPI bus with 8051 microcontroller. [5+5]

**OR**

7.a) Explain the interfacing procedure of an 8-bit DAC with 8051 microcontroller.

b) Briefly discuss about the USB. [5+5]

8.a) Summarize the complete register set of ARM processor.

b) Explain about exceptions, interrupts and the vector table in an ARM processor. [5+5]

**OR**

9.a) Explain ARM processor branch instructions with an example.

b) Draw and explain current program status register of ARM processor. [5+5]

10.a) Design block diagram for CORTEX processor.

b) Explain Memory processing and commands used in OMAP processor. [5+5]

**OR**

11.a) Design Architecture of OMAP processor.

b) Brief about interrupts in CORTEX processor. [5+5]

---ooOoo---

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G