**Code No: 155CF** **R18**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**
**B. Tech III Year I Semester Examinations, January/February - 2023**
**MICROPROCESSORS AND MICROCONTROLLERS**
**(Common to ECE, EIE)**

**Time: 3 Hours** **Max. Marks: 75**

**Note:** i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART – A**

**(25 Marks)**

| | | |
|---|---|---|
| 1.a) | List the dedicated interrupts of 8086 microprocessor. | [2] |
| b) | Define macro with example. | [3] |
| c) | What is the difference between microprocessor and microcontroller? | [2] |
| d) | Explain PSW of 8051 microcontroller. | [3] |
| e) | List out the important features of the A/D converter. | [2] |
| f) | What is the significance of EA pin? | [3] |
| g) | What is 'Thumb' in ARM processor? | [2] |
| h) | Differentiate between CPSR and SPSR. | [3] |
| i) | Write two features of Cortex processors. | [2] |
| j) | Briefly explain about memory map of Cortex processors. | [3] |

**PART – B**

**(50 Marks)**

| | | |
|---|---|---|
| 2.a) | Explain the concept of segmented memory. What are the advantages? | |
| b) | Describe the implementation of pipelined process of 8086. | [5+5] |
| | **OR** | |
| 3.a) | Write an assembly language program to count number of even and odd numbers in the array of sixteen bit numbers. | |
| b) | List out the shift and rotate instructions of 8086 microprocessor with examples. | [5+5] |
| 4.a) | Explain the concept of memory organization of 8051 microcontroller. | |
| b) | Explain the addressing modes in 8051 microcontroller. | [5+5] |
| | **OR** | |
| 5.a) | Draw the pin Diagram of 8051 microcontroller and explain the function of each pin in detail. | |
| b) | Write a program to count the numbers of 1's and 0's in 8-bit data stored. | [5+5] |
| 6.a) | Draw the internal RAM organization of 8051 microcontroller and explain it. | |
| b) | Explain RS-232 Standards. | [5+5] |
| | **OR** | |
| 7.a) | Explain the timer control register and timer mode control register. | |
| b) | Discuss about 8051 serial port programming. | [5+5] |

8.a) Draw the architectural block diagram of ARM and explain data flow referring each unit.

b) Explain the working of "Barrel shifter" with an example instruction and diagram. [5+5]

**OR**

9.a) Explain the three-stage pipelining implemented in ARM processor.

b) Explain the different exceptions in ARM processors. [5+5]

10.a) What are the advantages of Cortex processors.

b) Explain the architecture of Cortex processor. [5+5]

**OR**

11.a) What are the advantages of OMAP processors.

b) Explain the architecture of OMAP processor. [5+5]

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