Code No: 155CF **R18**

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

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)	What is the difference between Macro and Subroutine?	[2]
b)	What is an Interrupt?	[3]
c)	What are the Special Purpose Registers of 8051?	[2]
d)	How does the 8051 differentiate between internal and external program memory?	[3]
e)	What is an UART?	[2]
f)	What is Half and Full Duplex transmission?	[3]
g)	What are the interrupts in ARM processor?	[2]
h)	What are the branch instructions of ARM?	[3]
i)	What are the debugging features of CORTEX M3 processor?	[2]
j)	List the applications of OMAP processor.	[3]

PART – B

(50 Marks)

2.a) Draw the internal architecture of 8086 microprocessor and explain its operation.
b) Explain maximum mode configuration of 8086 microprocessor. [6+4]

OR

3.a) Explain 8086 macro definition and macro call with suitable example.
b) Write an assembly language program to find the largest number from an unordered array of 8-bit numbers. [5+5]

4.a) Explain any five addressing modes of 8051 with example.
b) Explain about the programmable I/O ports of 8051 microcontroller. [5+5]

OR

5.a) Describe the timer mode 3 used in 8051 microcontroller.
b) Write a program to add 16 bit numbers using 8051 microcontroller. [5+5]

6.a) Describe the working of I^2C bus with a neat diagram.
b) Explain the block diagram and the functions of each block of the 8251 USART. [5+5]

OR

7.a) Explain the procedure of interfacing D/A and A/D converter circuit.
b) Discuss how memory chips and I/O devices are interfaced to a Microcontroller. [5+5]

8.a) With a neat diagram, explain the architecture of ARM processor.
b) Briefly explain about Thumb Instructions. [6+4]

OR

9.a) Explain Software interrupt instructions with necessary examples.
b) With a neat diagram, explain the Pipeline operation in ARM processor. [5+5]

10.a) Explain the operation modes of CORTEX M3 processor with neat diagram.
b) Discuss in detail about the general purpose and special registers of CORTEX M3 processor. [5+5]

OR

11.a) With a neat diagram, explain the architecture of OMAP processor.
b) Briefly explain the reset sequence of CORTEX M3 processor. [5+5]

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