

R16**Code No: 135BF****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, May/June - 2019****MICROPROCESSORS AND MICROCONTROLLERS****(Common to EEE, EIE)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) Explain the use of *Direction flag* and *Trap flag* in 8086 microprocessor. [2]
- b) What are addressing modes? Explain immediate addressing mode of 8086 microprocessor with two examples. [3]
- c) How many timers and counters are available in 8051 microcontroller? What are their sizes? [2]
- d) List the various interrupts supported by the 8051 microcontroller. [3]
- e) What is EEPROM? [2]
- f) What are the advantages of serial data transfer scheme? [3]
- g) What are the main features of ARM processors? [2]
- h) List and explain condition code flags in program status register of the ARM processors. [3]
- i) What is the size of Thumb instruction set of ARM processor? [2]
- j) What are the advancements of Thumb-2 instruction set over Thumb instruction set? [3]

PART - B**(50 Marks)**

2. With a neat diagram, discuss the internal architecture of 8086 microprocessor. Also discuss their merits and applications. [10]

OR

- 3.a) Discuss different instruction formats supported by the 8086 microprocessor.
- b) Write an assembly language program in 8086 to arrange the given 8-bit numbers in ascending order. [5+5]
- 4.a) Explain the I/O ports of 8051 microcontroller.
- b) What are various addressing modes supported by 8051? Discuss with example instructions. [4+6]

OR

- 5.a) Explain in detail the memory organization of 8051 microcontroller.
- b) Explain any four arithmetic instructions of 8051 microcontroller with examples. [6+4]

- 6.a) Write a short note on board communication interfaces.
b) Discuss the interfacing of external RAM with 8051 microcontroller. [4+6]
- OR**
- 7.a) What is the need for A-to-D controllers? Explain the interfacing of A-to-D controllers with 8051 microcontroller.
b) What is UART? Discuss its working. [7+3]
8. What is the size of ARM registers? Explain in detail the register set of ARM processor. [10]
- OR**
- 9.a) What are interrupts? List different interrupts supported by the ARM processor.
b) Explain the Thumb instructions of ARM processor. [5+5]
- 10.a) Discuss the main features of CORTEX Processor.
b) What is a superscalar processor? Explain. [5+5]
- OR**
11. List the main features of OMAP processor. With a neat diagram, explain the architecture of OMAP processor. [10]

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