

**R18**

Code No: 155CF

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year I Semester Examinations, August - 2022**

**MICROPROCESSORS AND MICROCONTROLLERS**

(Common to ECE, EIE)

Time: 3 Hours

Max. Marks: 75

**Answer any five questions  
All questions carry equal marks**

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- 1.a) Briefly explain register organization in 8086 microprocessor.
- b) Describe the memory segmentation and instruction queue. [8+7]
- 2.a) Define addressing mode and explain the different addressing modes presented in 8086 Microprocessor with examples.
- b) Explain while loop and repeat-until structures with an example. [8+7]
- 3.a) Explain the different assembly programming tools used in 8051 microcontroller in detail.
- b) Discuss the register set of 8051. [8+7]
- 4.a) Explain the different Instruction set of 8051 in detail.
- b) Explain various modes of operation of timer /counters in 8051. [8+7]
- 5.a) Explain the concept of On board Communication Interfaces-I2C Bus along with diagram.
- b) Write short notes on ADC interfacing with 8051 Microcontroller. [8+7]
6. Explain the following terms in detail:
  - a) UART
  - b) USB. [8+7]
- 7.a) Draw and explain the interrupt vector table of ARM Processor in detail.
- b) List out different Branch instructions of ARM Processor and explain. [8+7]
8. List out different futures of CORTEX Processor and explain its advantages. Compare with ARM processor. [15]

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**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? [5+5]
  - 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. [5+5]
  - 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. [5+5]
  - 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. [5+5]
  - 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. [5+5]
  - b) Explain RS-232 Standards. [5+5]
- OR**
- 7.a) Explain the timer control register and timer mode control register. [5+5]
  - 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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Used papers 2023

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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year I Semester Examinations, March - 2021**

**MICROPROCESSORS AND MICROCONTROLLERS**

**(Common to ECE, EIE)**

**Time: 3 Hours**

**Max. Marks: 75**

**Answer any five questions  
All questions carry equal marks**

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- 1.a) Discuss the following addressing modes with examples:  
i) Direct ii) Register indirect iii) Base plus index iv) immediate v) Scaled indexed.
- b) Write an ALP using 8086 instructions to count the numbers of zeros in a given 8-bit number. [8+7]
- 2.a) Explain structure of 8086 interrupt vector table with neat diagram.
- b) Discuss the functions of segment registers of 8086 with examples. Give some advantages of memory segmentation. [7+8]
- 3.a) State various modes available for timers in 8051.
- b) Explain how interrupts are prioritized? [8+7]
- 4.a) With example, explain the arithmetic and logic instruction of 8051 microcontroller.
- b) Explain the different addressing modes of 8051. [7+8]
- 5.a) Draw and Explain interfacing of DAC with 8051. Write a program to generate square wave.
- b) Explain bit addresses for RAM. [8+7]
- 6.a) Explain the bit addresses for I/O of 8051
- b) Explain the baud rates of serial communication in 8051. [7+8]
- 7.a) Describe the pipeline operation of ARM.
- b) Which are the different features of ARM instruction set that make it suitable for embedded applications. [7+8]
- 8.a) With a neat diagram, explain the different general purpose registers of ARM Processors.
- b) Discuss about the OMAP processor in detail. [8+7]

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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year I Semester Examinations, September - 2021**

**MICROPROCESSORS AND MICROCONTROLLERS**

(Common to ECE, EIE)

**Time: 3 hours**

**Max. Marks: 75**

**Answer any five questions  
All questions carry equal marks**

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- 1.a) Draw the Register organization of 8086 Microprocessor and explain the operation of each register.
- b) Discuss about different instruction formats of 8086 with examples. [8+7]
2. With a neat diagram, explain the architecture of 8086 microprocessor. [15]
- 3.a) Explain the memory organization of 8051 microcontroller with neat diagram.
- b) Write a program to transfer a byte from code memory address 1000H to internal RAM and external RAM address 10H and 1000H respectively. [9+6]
4. Explain the instruction set of 8051 microcontroller with suitable examples. [15]
- 5.a) Develop an assembly language program for key identification and key-code generation.
- b) Explain the interfacing procedure of an 8-bit ADC. [7+8]
- 6.a) Discuss how wire-AND connection of all SDA and SCL lines help in bus arbitration.
- b) How in and out data transaction takes place in USB? Give operational overview. [7+8]
- 7.a) What is Pipelining. Explain in detail schematically with respect to ARM processor.
- b) Explain the ARM Single-Register and Multiple-Register load-store addressing modes with example. [8+7]
8. Explain the architecture of CORTEX processor with neat diagram. [15]

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