

410705/410805

Roll No. \_\_\_\_\_

Total No. of Pages: **3**

**410705/410805**

**B. Tech. IV - Sem. (Main / Back) Exam., (Academic Session 2021- 2022)**

**Electronics & Communication Engineering**

**4EC4 – 05/4EI4 – 05 Microcontrollers**

**Common to ECE & EIC**

**Time: 2½ Hours**

**Maximum Marks: 120**

**Min. Passing Marks:**

**Instructions to Candidates:**

**Part – A: Short answer questions (up to 25 words) 6 × 3 marks = 18 marks.  
Candidates have to answer six questions out of ten.**

**Part – B: Analytical/Problem solving questions 3 × 10 marks = 30 marks.  
Candidates have to answer three questions out of seven.**

**Part – C: Descriptive/Analytical/Problem Solving questions 3 × 24 marks = 72 marks.  
Candidates have to answer three questions out of five.**

*Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.  
(Mentioned in form No. 205)*

1. NIL

2. NIL

### **PART – A**

1.  Explain the difference and similarities between SUB and CMP instructions.
2.  Define interrupt and explain the different interrupt presented in 8086 microprocessors.
3.  Explain the differences between synchronous and asynchronous serial communication.
4.  Why Cache memory is required?

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Q.5 ✗ Write about wait and idle states.

Q.6 ✓ What is Cache maintenance?

Q.7 ✓ What are assembler directives of 8051 microcontrollers?

Q.8 ✓ Write the instruction format of the ADDITION and SUBTRACTION instruction in 8085 microprocessors.

Q.9 ✗ Write a program for transmission and reception in the loopback mode.

Q.10 ✓ Discuss the working of stack and subroutine in 8085 programming.

### PART - B

Q.1 ✗ Write an assembly language program to find the largest number of an array 8-bit array.

Q.2 ✗ Write an assemble language program to print the given string "BTU BIKANER".

Q.3 ✓ Explain about the memory organization of PIC microcontroller.

Q.4 ✗ Write an 8086 assembly program to convert a 16-bit binary into equivalent BCD.

Q.5 ✓ What are the different Addressing modes of 8051 microcontrollers? Explain each with suitable examples.

Q.6 ✓ Draw the architecture of ARM controller and explain the operation of each block in it.

Q.7. Describe the system level interfacing design.

## PART – C

- Q.1 (a) Draw the Interfacing diagram of D/A Converter with 8086 Microprocessor along with 8255 PPI and explain its operation.
- (b) Describe in detail the Direct Memory Access (DMA).
- Q.2 (a) Draw the 8051 Microcontroller architecture and explain its operation in detail.
- (b) With the help of a block diagram, explain how segment based virtual memory is implemented in 80286, 80386 and 80486 processors?
- Q.3 (a) Describe in detail the advanced coprocessor architecture 80286.
- (b) What is the difference between timer and counter of 8051 microcontrollers? How to start / stop the counter of 8051 when GATE control is not used?
- Q.4 (a) Explain different I/O ports presented in PIC controller and draw the necessary diagram for it. <https://www.btubikaner.com>
- (b) Describe the concept of virtual memory.
- Q.5 (a) Explain the different Thumb programming model of ARM controller with examples.
- (b) Describe in detail A/D and D/A converters.
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