

**NETTUR TECHNICAL TRAINING FOUNDATION**  
**DIPLOMA IN MECHATRONICS ENGINEERING & SMART FACTORY – CP15**  
**IV SEMESTER REGULAR & SUPPLEMENTARY EXAMINATION-JULY 2023**

**Subject: Microcontroller & Applications**  
**Subject Code: CP15401T**

**Total Time: 2 Hr.**  
**Total Marks: 50**

**PART B**

**1.0 ANSWER ANY EIGHT OF THE FOLLOWING**

**2\*8=16**

- 1.1 Classify the types of Microprocessor based on Architecture
- 1.2 Draw RAM memory model
- 1.3 What do you mean by accumulator?
- 1.4 List out the different memories of PIC16F877A and its size
- 1.5 What is the significance of RP0 and RP1 in STATUS register?
- 1.6 What do you understand by the term PWM in PIC16F877A?
- 1.7 Write the abbreviation for SPI & I<sup>2</sup>C
- 1.8 What is SLEEP mode in PIC microcontroller?
- 1.9 Draw the power on reset circuit in PIC16F877A
- 1.10 Why the Watch Dog Timer required in Microcontroller?

**2.0 ANSWER ANY SIX OF THE FOLLOWING**

**3\*6=18**

- 2.1 State the difference between Von Neumann and Harvard Architecture
- 2.2 Explain the different types of RAM
- 2.3 What are the register banks available in 8051 and how we can select the banks?
- 2.4 Draw and explain about STATUS register of PIC16F877A
- 2.5 Write a short note on Capture, Compare & PWM Module in PIC16F877A
- 2.6 Draw the block diagram of timer and explain different timer modules in PIC16F877A
- 2.7 Draw the block diagram of ADC using PIC16F877A
- 2.8 Write down the alternate functions of Port 3 in 8051 Microcontroller

**3.0 ANSWER ANY FOUR OF THE FOLLOWING**

**4\*4=16**

- 3.1 Write down the difference between RISC processor and CISC processor
- 3.2 What is memory? What are the main classification of memory?
- 3.3 Briefly explain about the I/O ports in PIC 16F877A.
- 3.4 Explain about the memory organization of PIC 16F877A.
- 3.5 Briefly explain the features of PIC Microcontroller.
- 3.6 Draw the block diagram of 8051 Microcontroller and mention its features

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Subject Code: **CPCOM 04 05**

Total Marks : **50**  
Total Time : **2H**

**PART B**

**1.0 ANSWER ANY EIGHT OF THE FOLLOWING**

**2\*8=16**

1. 1 Draw the block representation of a microcontroller.
1. 2 What is addressing mode? List out the addressing modes in 8051
1. 3 State the function of EA (External Access) pin in 8051.
1. 4 Draw the power on reset (POR) in 8051.
1. 5 What is DPTR in 8051?
1. 6 State the function of accumulator in 8051.
1. 7 Differentiate between timer and counter.
1. 8 Write an assembly language program to add two numbers in 8051.
1. 9 Explain the directive: 1)ORG 2)END
1. 10 What is assembler?

**2.0 ANSWER ANY SIX OF THE FOLLOWING**

**3\*6=18**

2. 1 Compare Microprocessor and Microcontroller
2. 2 List out the interrupts available in 8051 and mention their vector location.
2. 3 Write the alternate functions of PORT3 in 8051.
2. 4 List the features of 8051.
2. 5 Draw and explain the format of PSW register in 8051.
2. 6 Explain the arithmetic instructions in 8051 with examples.
2. 7 Write an 8051 C program to convert packed BCD to ASCII.
2. 8 What is memory decoding?

**3.0 ANSWER ANY FOUR OF THE FOLLOWING**

**4\*4=16**

3. 1 What is memory? What are the main classification of memory
3. 2 Write a program to blink an LED with a delay of 1 second using timer 0.
3. 3 Draw and explain about the 4X8 bit register.
3. 4 Write an 8051 C program to display NTTF using LCD in C
3. 5 Explain the different categories of instruction set in 8051 with examples.
3. 6 Draw and explain the interfacing diagram of DC motor with 8051.

