



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:V
Class:TY	Program:B.Tech
Branch Code:ETC	Pattern:2023
Name of Course:Interfacing Techniques	Course Code:2302306C
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 2 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Marks CO

Question No. 1

- 1a) Explain immediate addressing mode and Direct addressing mode in PIC 18 (6) CO1

Question No. 2

- 2a) Explain following SFRs in PIC18F4550 (6) CO2

1.LAT Register 2.PORT Register 3. TRIS Register

Question No. 3

- 3a) Explain the I2C protocol with the help of start condition, addressing, and stop condition. (8) CO3

OR

- 3b) Explain SPI Protocol in brief. (8) CO3
3c) Write a C program for the PIC18 to transfer the message "YES" serially at 9600 baud, Use 8 bit data and 1 stop bit. Do this continuously. (8) CO3

OR

- 3d) Write a C Program to send two different strings to the serial port. Assuming that SW is connected to pin PORTB.5, monitor its status and make a decision as follows: (8) CO3

SW=0: Send your first name

SW=1: Send your last name

Assume XTAL=10MHz, baud rate of 9600 and 8 bit data.

Question No. 4

- 4a) Draw the interfacing diagram and Write a program to interface 4 X 4 Matrix Keypad to PIC 18F4550. (8) CO4

OR

- 4b) Draw an interfacing diagram and write a code to blink LEDs in common anode configuration. (8) CO4
- 4c) Draw an interfacing diagram and Write an embedded C program for the PIC18F4550 microcontroller to control the rotation of a **4-phase, 7.5° step angle stepper motor** using the **wave drive method**. (8) CO4

- The stepper motor coils are interfaced through a driver circuit to **PORTB** of PIC18F4550.
- A **switch is connected to pin RD7**.
- If the switch is **pressed (SW = 0)**, the stepper motor rotates **clockwise**.

If the switch is **released (SW = 1)**, the stepper motor rotates **anticlockwise**.

OR

- 4d) Draw the interfacing diagram and prepare a lookup table to display the word HAPPY on a 7-segment display connected in **Common Anode mode** using the **PIC18F4550 microcontroller**. (8) CO4

Question No. 5

- 5a) Explain the difference between analog and digital sensors with examples. (8) CO5

OR

- 5b) Explain the basic working of Arduino with sensors. How does Arduino process input from sensors? (8) CO5
- 5c) Design a simple system using Arduino to turn ON an LED when a button is pressed. Provide a brief explanation. (8) CO5

OR

- 5d) Write a code to interface a temperature sensor (analog) with Arduino and display the reading on the serial monitor. (8) CO5

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