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 logical operations in PIC18 using assembly instructions. (AND, OR, COMF – with syntax and examples)	(6)	CO1
Question No. 2			
2a)	Explain IPR1 register.	(6)	CO2
Question No. 3			
3a)	Explain RCSTA register in detail.	(8)	CO3
	OR		
3b)	Explain SPI Protocol in brief.	(8)	CO3
3c)	With Fosc=10MHz, find the SPBRG value needed to have the following baud rates: (Assume Low Speed Mode) a) 9600 b) 4800 c) 2400 d) 1200	(8)	CO3
	OR		
3d)	Write a C program for the PIC18 to transfer the letter G serially at 9600 baud rate continuously. Use 8 bit data and 1 stop bit. Assume XTAL=10MHz	(8)	CO3
Question No. 4			
4a)	Draw the interfacing diagram and Write a program to interface LCD to PIC 18F4550.	(8)	CO4
	OR		

4b) Draw the interfacing diagram and prepare a lookup table to display the numbers 0 to 9 on a 7-segment display connected in Common Cathode mode using the PIC18F4550 microcontroller. (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 Write a program to interface 4 X 4 Matrix Keypad to PIC 18F4550. (8) CO4

Question No. 5

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

OR

5b) Differentiate between active and passive sensors. Provide two examples of each. (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

····· End of question paper·····