



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:III
Class:PG-II	Program:M.Tech
Branch Code:ETC	Pattern:2024
Name of Course:Communication Buses and standards	Course Code:2402601A
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 the working of RS-232 serial communication with a neat frame structure diagram. (6) CO1

Question No. 2

- 2a) Discuss the frame structure and timing diagram of SPI communication. (6) CO2

Question No. 3

- 3a) Explain the architecture of CAN bus with a neat block diagram. Describe the function of each block. (8) CO3

OR

- 3b) Explain how CAN ensures reliable, real-time data communication in embedded systems. (8) CO3

- 3c) Describe the bit-wise arbitration mechanism in CAN with a neat diagram. (8) CO3

OR

- 3d) Explain the physical interface of CAN with a neat diagram. Discuss the roles of CAN_H and CAN_L lines. (8) CO3

Question No. 4

- 4a) Describe the layered architecture of USB and explain the functions of each layer. (8) CO4

OR

- 4b) Explain conversion of RS232 to USB and give its applications. (8) CO4

- 4c) Discuss USB transfer types and explain their applications in real-world devices. (8) CO4

OR

- 4d) Explain the functionalities of a USB driver in data transfer and power management. (8) CO4

Question No. 5

- 5a) Explain the basic concept and purpose of the PCI bus in computer systems. (8) CO5

OR

- 5b) Explain the key characteristics of PCI such as bus width, clock speed, plug and play, and burst transfer. (8) CO5
- 5c) Explain the hardware protocols used in PCI communication, including arbitration, addressing, and data transfer. (8) CO5

OR

- 5d) Draw and explain the PCI bus transaction timing diagram for a read or write cycle. (8) CO5

..... End of question paper.....